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BOARDWATCH MAGAZINE

Guide to Online Information Services and Electronic Bulletin Boards

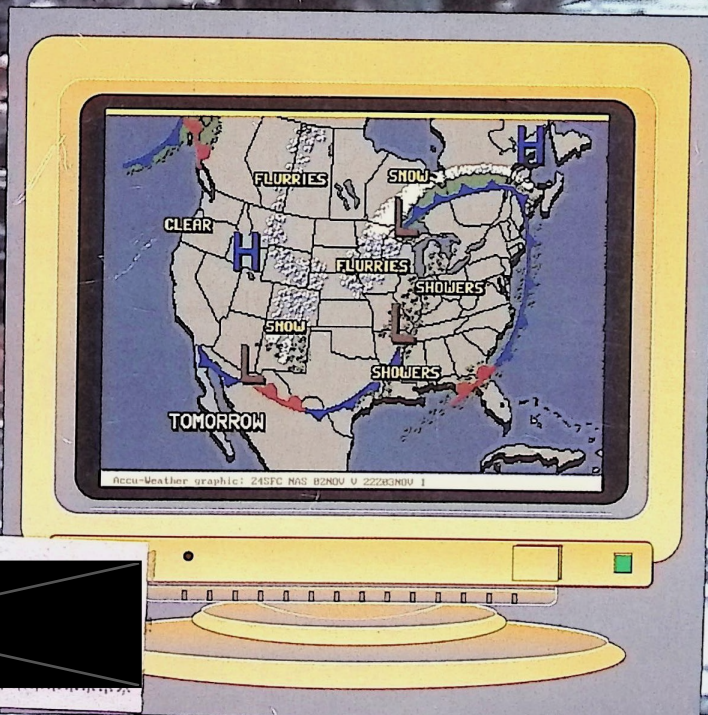
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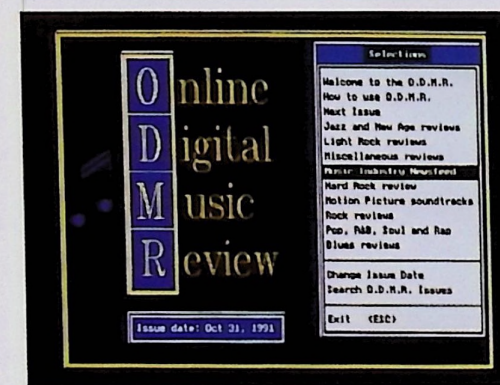
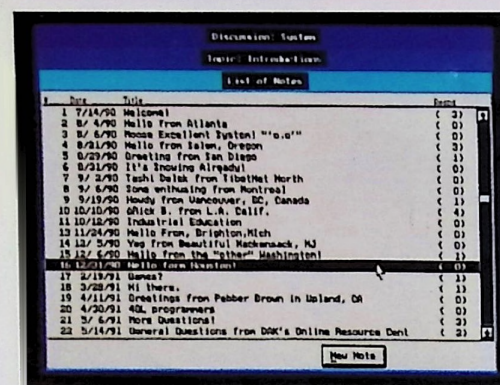
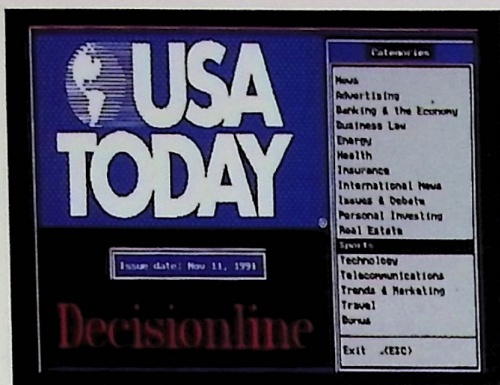
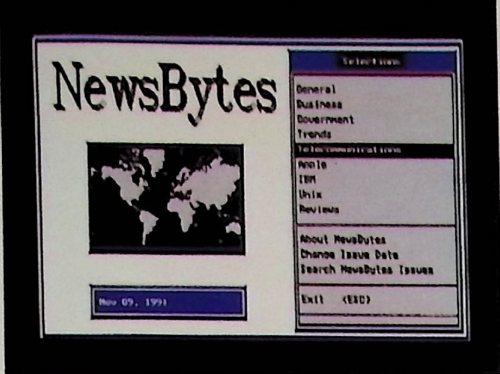
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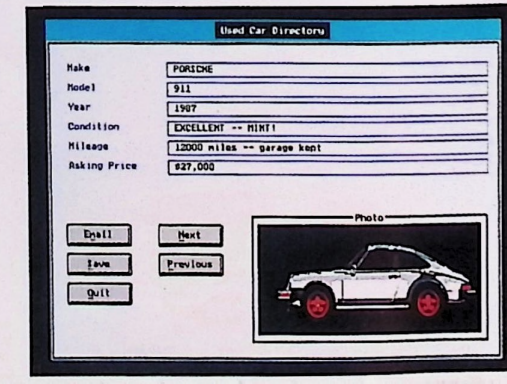
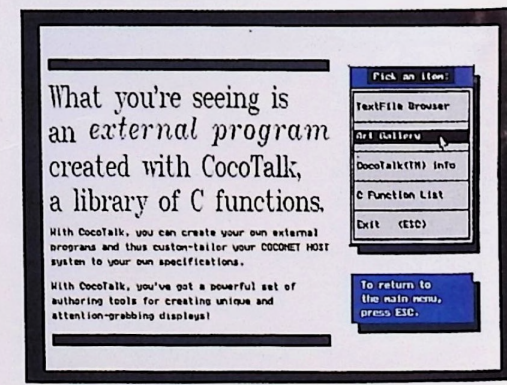
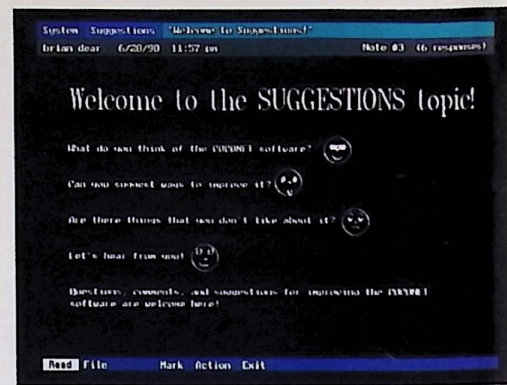
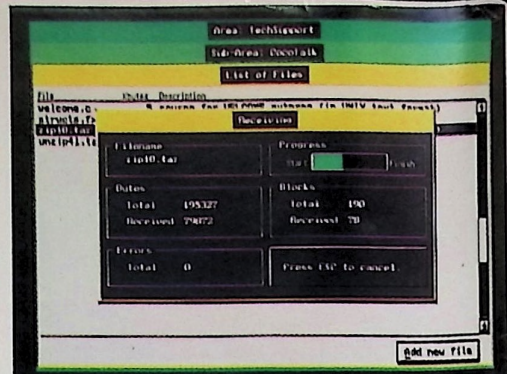
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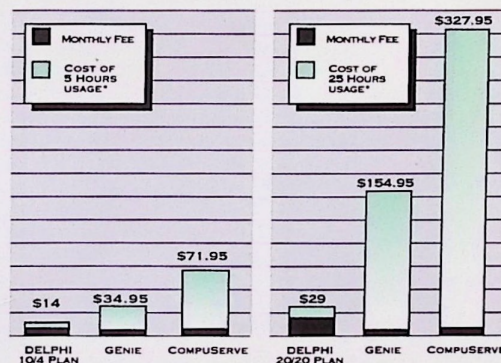


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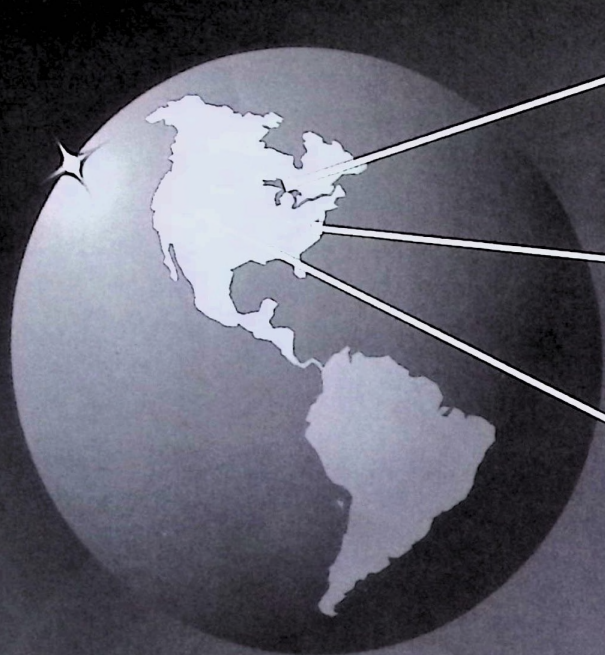
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EDITOR'S NOTES

ANOTHER TICK OFF THE OLD DOS CLOCK

By the time this issue is in the hands of most of our readers, the clock will have felled another annual digit in the march of time, Santa will have delivered another sled full of modems, and Boardwatch enters calendar year seven as a print magazine specifically serving a group that abhors the use of paper and the senseless slaughter of innocent trees to pass information. I rather enjoy the sense of anachronism - it works with my choice of clothes.

As our readership has grown, the process of doing a Boardwatch has changed as well. It's become more complicated, requires more people, and isn't just a guy in the basement of a cabin in the Rocky Mountain foothills any longer. Due to a bit of a technical foul up, I had to actually go to the printer for a press check about midnight one evening recently. It was the first time I had actually seen the publication in the process of printing in well over a year. The sight of Boardwatch ripping up through about three stories of web press at a hundred miles an hour or so was a little cathartic. The discarded misprint stock bundled for recycling comprised more paper than the whole issue required not so long ago.

This year will see a number of changes in the online community. Prodigy's success in amassing numbers is causing new life in the concept of bulletin boards run by large corporations. Bill Gates has funded a company quite separate from Microsoft to look at distributing graphic images of art online and some other things. AT&T, IBM, DEC, and any number of other corporate behemoths are looking at getting into the consumer online services game and we look forward to a number of product introductions.

The early videotext services failed. Some would ascribe this to being be-

fore their time. We actually think they stalled the clock using a poor paradigm for the online world and it will be interesting to see if they make the same mistakes again. Basically, people become involved with online services not to consume presented information, but to participate in communities interactively. Oh, they'll glance at the odd weather report, but they are there, and have always been there, to communicate with each other. Prodigy almost followed the same fatal path with their service, but did offer bulletin boards as a "sideline". Today, Prodigy callers post over 80,000 messages a day to "bulletin boards" on the service and Prodigy, to their credit, did "get it." They are currently expanding the number and nature of BBS on their online service quite aggressively. While it still appears to be losing \$20-\$30 million annually - they also appear to have learned a great deal about why people want to be online - and that points to eventual success.

This is a frightening thing for most corporations to contemplate actually. The world they are comfortable with involves presenting information on a screen that their lawyers have approved and their programmers have designed and allowing the masses to "view." This sort of information works pretty well as window dressing, but it can never be the core of an online service. Weather, news, and advertising fall into the category of "screen pretties" not services. Callers want to talk to each other. And the concept of unleashing callers and non-staff moderators on the service to interact with each other and basically produce the core of the information of an online service, with all the limited control that implies, is a frightening thing for a corporation to face. Organizationally, they are based on coercion and control of employees, distribution channel, and customers. To let customers have actual control of the production of the product, to any degree at all, rather upsets the economic food chain.

Up to this point, this has been most of the "why" in why bulletin boards run by individuals have been so success-

ful, and online services run by corporations have found such meager return. It will be very interesting to see if in the 1993 episode of this saga, corporations can buckle on the gun belts and stride into the online frontier to good effect. With the stresses and blows they've encountered on all fronts over the past decade, they may rather flexibly inclined to learn new models at this point. Or not.

Other predictions for 1993? CD-ROMs. Yes, they've been coming forever, but in the past there have been few titles because it was a limited market of people with drives, and there was little reason to buy a pricey \$600 drive with so few titles. The year 1993 is when this breaks. With the price of CD-ROM drives falling below \$200, we would predict that a majority of PC users will add them to their machines before the end of the year and CD-ROM title announcements are already coming in a flood. Adding a CD-ROM drive will be no more of a task than adding a floppy drive. Look for an enormous boom in this area.

Similarly the move to high speed modems will be over by mid-year with mop-up operations in the second half. 14,400 kbps V.32bis modems with fax will be common in the \$150-\$225 range almost immediately and mass conversion will happen within weeks. The performance jump from 2400 bps to 14.4 kbps is enormous - callers have simply been waiting for their price. It's here.

In the BBS community, 1993 will be a big year for bulletin boards to offer Internet e-mail and Usenet News Groups. Pioneering boards are already doing this but this service will serve as a separator between the big boys and the little ones in the BBS pecking order during 1993. The Internet shapes up as an e-mail backplane that all services, from single line bulletin boards to Prodigy and other commercial services, plug into for universal global electronic mail connectivity. It is now bigger than everybody. The e-mail island struggle that went on for well over a decade will be over and an account on

any significant BBS will allow you global e-mail. Most of what callers want from the Internet is summed up at this point by Usenet News Groups and electronic mail. So instead of Mohammed going to the mountain, in this case the mountain makes the move. Rather than millions of callers scrabbling for Internet access, by far the majority of them will accept the BBS as the appropriate interface for Internet services - relieving much of the agonizing within the Internet community as to how to service and train vast numbers of new users. Global e-mail from your desktop using QWK mail readers is happening now. It can be done with a local call to a local BBS using the interface callers are already familiar with.

And the Internet itself suddenly faces a brighter future. The election of Clinton/Gore does have one rather obvious consequence. After an election, you have to have something for a Vice President to do. And Albert Gore has been a proponent of a national data highway for nearly 10 years now - after the model of our Interstate highway system. In the scheme of things funded in Washington, the costs of telecommunications and networking really aren't very awe inspiring when you focus on the backbone of it all - avoiding the costs of the "last mile" upgrade to fiber. And whatever economic program emerges, we're pretty confident Gore will get enough funding to do some substantial things in the National Education and Research Network (NREN) arena he has forged. We're encouraged by his July introduction of "Son of NREN" legislation that he sincerely intends a national data network for the masses - not just the ivory tower crowd. And this all points toward an expanded Internet in almost all respects. The following is an excerpt from one of Clinton's position papers, A TECHNOLOGY POLICY FOR AMERICA Six Broad Initiatives by Bill Clinton (September, 1991). The first of the six broad initiatives deals with networks and NREN:

"The Clinton-Gore technology policy consists of six broad initiatives that together will restore America's technological leadership:

"1. Building a 21st Century Technology Infrastructure. Infrastructure has traditionally been the responsibility of federal and state governments. Investing in infrastructure means more than repairing bridges, harbors and highways. Today, the United States faces a new series of communications, transportation and environmental needs for the 21st century. The creation of a 21st century infrastructure program would serve as a critical technology driver for the nation. It would stimulate major new national R&D efforts; create large, predictable markets that would prompt significant private sector investments; and create millions of new jobs.

"A 21st century infrastructure would address many practical problems. For example, the government can serve as a catalyst for the private sector development of an advanced national communications network, which would help companies collaborate on research and design for advanced manufacturing; allow doctors across the country to access leading medical expertise; put immense educational resources at the fingertips of American teachers and students; open new avenues for disabled people to do things they can't do today; provide technical information to small businesses; and make telecommuting much easier.

"Such a network could do for the productivity of individuals at their places of work and learning what the interstate highway of the 1950s did for the productivity of the nation's travel and distribution system.

"Each year, I plan to devote a significant portion of my four year, \$80 bil-

lion Rebuild America fund to laying the groundwork for the nation's infrastructure needs in the 21st century. Federal funding for the National Research and Education Network is one example of how the federal government can serve as a catalyst for private sector infrastruc-

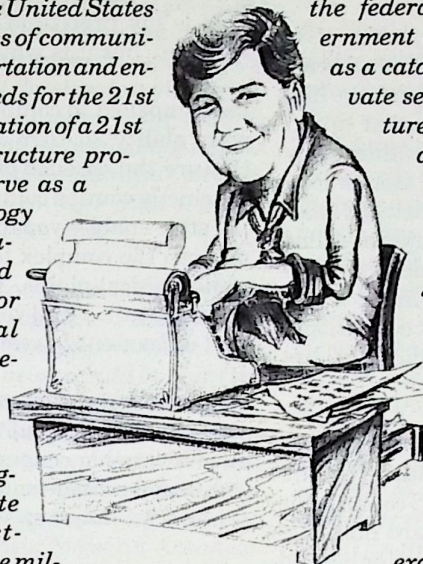
ture investment. We will also provide additional funding to network our schools, hospitals and libraries.

"As part of the effort to assess U.S. needs and develop appropriate programs, the federal government must monitor, or "benchmark", what foreign governments are doing. For example, the Japanese

government has committed to invest over \$120 billion by 1995 to develop a digital broadband communication infrastructure called the Information Network System, and plans to invest another \$150 billion to establish model programs for business and residential users.

"A comprehensive infrastructure program must also include effective standards and regulations. By establishing reasonable standards and a constructive regulatory environment, the government can send clear signals to industry about important, emerging markets and spur private sector investment. For example, the digital standard that the Federal Communications Commission (FCC), in cooperation with industry, established for high resolution television provides an excellent indication of the future technical direction of the industry and will do much to facilitate private sector R&D.

"A 21st century infrastructure program should consist of the following



five elements: Funding the establishment of key networks and demonstration projects; Benchmarking U.S. programs against those of other major industrial nations; Establishing standards and a regulatory climate that fosters private sector investment; Involving the federal labs, companies, and universities in conducting R&D on key technical issues; and Providing training for users of networks and databases...."

It sounds good. Since Clinton scattered promises across America like chaff, we're a little reluctant to put much confidence in his fulfilling any of them. But as one of Gore's long term pet interests, this concept has a chance. Our June 92 editorial called for just such a commitment to a national data highway in concert with a strong program for adult educational opportunities. It's possible we'll get it.

As to Boardwatch itself, we continue to grow by every measure. We are starting our annual BBS contest this month, and working hard on a significantly expanded and enhanced version of the Online Networking Exposition and BBS Convention (ONE BBSCON) so well received this past August. Phil Becker and I were both a little shaken by the explosive forces unleashed at ONE BBSCON in August and the continuing fallout since then. But we've about recovered and rather than sitting back and watching it happen, we're actively working at some pretty overwhelming goals for a convention twice as big, and an order of magnitude more fun for 1993. Phil's off slaying hotel and site dragons this month with pretty much agreed goals to do things that just can't be done in negotiations of this sort. Should he return alive with the dragon's liver, and he's got a charming habit of doing that, we'll be reconvening our Executive Advisory Board and announcing the first details of the next ONE BBSCON. Stay with us.

Jack Rickard

LETTERS

Address correspondence to Letters to the Editor, Boardwatch Magazine, 7586 West Jewell Ave. Suite 200, Lakewood, CO 80232 or via e-mail to letters@boardwatch.com.

Dear Jack,

This is my first time to correspond with you, but it is way over due.

I'm compelled to complement you on your ability to turn a phrase and capture the essence of an issue in a succinctly worded column. Your writing style enables you to communicate on both the complex technology and philosophical plains. You truly have a unique gift. I find your magazine a real enjoyment to read each month.

You have come a long way since Martin Marietta. Keep up the good work. Also a very big congratulations on a successful convention. This is indeed a powerful industry.

On another note...

I view with some alarm a trend in the online industry. Years back the online world was virtually all text oriented and all one needed was a good terminal communications software package to call any service they desired. Now, with PRODIGY, COCONUT's Coconet, America Online, PowerVision, ZiffNet/CIM, US VideoTEL, Internet's Gopher, the NAPLPS systems and many others it seems that future users are going to have to deal with a separate piece of software for every high-end graphical service they want to access. This in my mind is getting away from standards and fragmenting the online data access world. Users are not going to stand for it in the numbers that all these services need to be financially successful. I, for one, do not have any room left on my 130 meg system. I would like to put out an open letter challenging all these graphical services and those yet to get in to this market, to find a way to standardize on some graphical for-

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Respectfully,

Jim Turner

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Dear Jim:

I share your alarm at the number and variety of access programs and the

hard disk chaos that ensues. If you recall, I predicted this bit of mess nearly four years ago in these pages. But your position comes from a view of a mature online industry currently devolving into a fractious squabble over graphics interfaces. I still view the online world as a pre-industry groping toward the tools necessary to have an industry.

Most of the development of the PC industry was accompanied by the struggle between standardization and innovation. If you recall, we had a pretty well accepted standard for 300 baud modems at one time. I'm very pleased to report we didn't adhere to it religiously. If we had, we would still be at 300 baud. Standards make life easier for vendors, users, and virtually everyone else. But they gain a weight of their own that tends to work against innovation and the development of better technologies.

The PC industry in general has been dominated by individuals who generally had a better idea and a better implementation for a specific task. If the product caught on in numbers, it won and became the standard. As a result, things moved relatively quickly. Standards were developed by brute force. Electronic bulletin boards and online services are inherently cooperative services. Every stop bit, parity form, speed, error correction, terminal emulation, and more is a negotiated compromise between users sharing a common nether world between computers and telephones and telephone switches - existing somewhere and nowhere simultaneously. Cyberspace is most precisely the negotiated zone of compromise between your computer and mine.

That makes standards difficult. And as one Internet mailing list participant observed online recently, "We simply have to stop standardizing things we don't understand."

Right now the online world is poised to make another technological leap - graphics. The barriers to getting online are inexcusably high. You chafe under multiple terminal programs. But it never was as simple as you describe with any "standard terminal pro-

gram." We never could really just deal with text. We were forced to deal with start bits, stop bits, data bits, parity bits, originate, answer, AT commands, initialization strings, file transfer protocols, and more - all to make text print out across the screen. We're actually having a debate within these pages in 1992 about - if you can believe it - escape sequences. Frankly, I am embarrassed in some instances to explain to new callers all the hoops they have to jump through to get online for the first time. Many are just historical embarrassments at this point that make not the slightest bit of sense in ANY environment - but we live with them. You've been doing it for a long while and are familiar with it. Go explain it to your aunt without getting red in the face.

One way we can lower these barriers is through graphics. Prodigy now sports 1.6 million users and many of them frankly never would have gotten online at all if it was left up to the BBS community. The concept of requiring people to learn about data bits and stop bits to get on a BBS makes about as much sense as requiring people to master pig Latin to get an Arkansas drivers license. Graphics provides a new environment to hide the historical detritus behind a curtain where it belongs. File transfer protocols were important when they were still under development. For my money, ZMODEM is now good enough. So why make anyone choose. You should point at the file you want and have it transferred to your PC by wishful thinking - not by taking a historical examination on the development of file transfer protocols.

But there is no standard "easy" interface. And so anyone wanting one has had to develop one. Once they developed it, they wanted it to belong to them to hold their users captive. This is a terrible attitude, but not illegal and they always reap their own reward. MCIMail, ATT, Western Union, SprintMail, and GE were all on the brink of owning electronic mail services in this country. But each wanted a captive user base and they jealously guarded theirs from each other. They stalled for years in linking their e-mail services. The Internet emerged

to solve the e-mail island problem and currently many of the e-mail only services are almost without a reason for existence. They're scrambling now to try to justify to their user base why their exorbitant charges make any sense at all simply to send an e-mail message. If they had treated the world with a bit more generosity of spirit, they would be an order of magnitude further along in the game than they are now.

Similarly, we are entering a period where dozens of proprietary graphics interfaces are emerging. Any one of them could be the standard but none will because the developers of these standards so desperately want them to create a captive user base and somehow, a bountiful font of cash. Since it won't work beyond very short term and meager benefits, they won't get what they want, but hope springs eternal. Meanwhile, somewhere along the line, someone will release an open graphic interface with appropriate tools much as CompuServe did with the GIF image standard. It will struggle to life, and then proceed to devastate everything else in its path. It will finally emerge the winner, and we'll have a graphical interface standard for online services.

While it could be anything, I think something based on the North American Presentation Level Protocol Syntax (NAPLPS) has the best shot at actually happening. Someone out there is going to do the tools just because they so obviously need to be done. I could easily be wrong. It could be something else entirely new. But at this point I would have to guess it will be NAPLPS and ultimately NAPLPS as a terminal emulation on a major terminal program such as Procomm or Qmodem.

Once it appears, it will take several years before it eliminates the problem you describe. We still get callers who want to know what ANSI graphics are. And we face several years of graphical confusion before this sorts itself out. But I don't want to go back to 300 baud ASCII TTY systems. And watching the creativity and innovation of the online community in developing new technologies is for me most

of the fun. Understand Jim, that when the modems are all standardized, the interfaces are all standardized, and it all works like an appliance, I'm outta here. I would guess there will be some new frontier about that time that needs something like a Boardwatch....

Jack Rickard

Dear Jack:

Let me be among the last to congratulate you on the fine job you did putting together ONE BBSCON. I'm among the last, not because I appreciate it any less, but only because I've been so busy since the convention that I didn't have a chance to be among the first. A lot of exciting things are going to take place across the land as a direct result of ONE BBSCON. I know this because I plan to be among those who do some of them. More about that another time. My point is...Thank You!

With the compliment out of the way, I have a question. You indicated to me at the meeting in Denver that the BBS community (those people who participate in BBSing) numbers some 10,000,000 people in the US. At another point I believe you indicated that number was growing by over 9,000 people per day. I remain astounded by those numbers, but will take your word for it. My question is, what percentage of those people are male, and what percentage are female? That question came up recently in a discussion with a couple of business associates, and I said that if anyone on the planet knew the answer, Jack Rickard would know! My associate seemed to think the ratio was 100:1 male, and I argued that it had to be more balanced than that. What do you think (or know) about the ratio?

In the way of a suggestion, a demographic study of the BBSing population might be an interesting topic for a Boardwatch Magazine article.

Mike Sandburg

Dear Mike:

Numbers comprise a funny game, and one I'm a little uncomfortable with. Primarily, most number generators within the PC community inflate numbers (lie) incessantly and with great vigor. Secondly, the growth in online usage is sufficient to make me appear to be lying if I relate the numbers. We actually put out the most conservative numbers possible, and generally if we err, we err on the downside rather intentionally.

Right now, we estimate about 45000 public dial up electronic bulletin boards operating in the United States. We define those as systems that would welcome a call by modem from a complete stranger with no prior contact. We derive this approximation using two quite different methodologies that consistently produce approximately the same result. We aren't exactly guessing.

Let me describe these methodologies and you calculate your own numbers. The first methodology involves the nodelist of the International FidoNet. There are over 17,000 bulletin boards worldwide that are "members" of FidoNet and their membership is actually defined by the nodelist. If you are in the nodelist, you are in FidoNet, and if you're not in the nodelist, you're not in FidoNet - pretty definitive. This nodelist is updated each Friday and it is, as best as I can tell, the most accurate BBS list in the world. Take the FidoNet nodelist and comb it for redundancy first - some systems are listed several times as network coordinator, echomail hub, and member system for example. The objective is to derive a list of unique BBS entries without redundancies. Further eliminate any BBS outside the area of interest - in our case the United States. This gives you the base number of FidoNet systems in the United States.

Next, take six cities that sport well maintained local BBS lists. Derive the ratio of the number of total BBS to the number of FidoNet BBS for each city and average them. You can then apply this ratio to the known count of

FidoNet bulletin boards to derive a national BBS count fairly accurately.

The other methodology again depends on maintained local BBS lists. Take a series of sample cities and total all boards in all the cities. Then total the population of the metropolitan statistical areas served by those cities as listed in the U.S. Department of Commerce city and state statistical abstract. This will give you a population to BBS ratio you can apply to the total population of the United States (currently about 254 million) to produce a total BBS population.

We've found these two methodologies consistently produce numbers within a 1000 BBS of each other and usually plus or minus four or five hundred and as you increase the number of sample cities, they tend to converge. They both depend on the accuracy and currency of the BBS lists maintained for the sample cities. We know these lists lag the actual number of active bulletin boards, but we haven't developed any way to tell precisely by how much - and it varies according to the enthusiasm and aggressiveness of those maintaining the lists. But up to this point, we've been confident that the actual number of operating BBSs is always greater than the count produced by these lists. And there are any number of BBSs that don't want to be listed on these lists for whatever reason.

The total number of callers is a bit more difficult. We basically take the userlog from a series of sample BBS operating in the same area and simply merge/purge the raw databases to calculate a factor of shared caller base. The reverse of that is an average number of callers per BBS that are unique. Currently, this seems to be running about 250 unique callers per BBS with many boards having fewer and many having a great deal more of course. But currently this renders a caller base of about 11.25 million. We would note that this dovetails nicely with an estimate by a research firm, Dataquest, of about 10.5 million.

The sex of callers is a bit mysterious in that there is a lot of online cross dress-

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ing going on. Many female callers are online under male personas to avoid various harassing situations, and a few males are on under female personas - probably to enjoy some of the harassment. Our BBS contest last year produced a little over 11,000 ballots in an arena that should not pose a threat to anyone in revealing their sex. It indicates an 86% male to 14% female distribution. The contest itself tended to bias toward social chat services that probably have a higher percentage of females than BBSs in general, but we're not sure by how much. I would guess online activity is about an 88-89% male sport.

I'm going to guess at this point that the number of new callers coming online with their first connect is coming very close to the magic 10,000 per day mark. And it appears to be accelerating. Most gratifyingly, anecdotally the question among NON callers has moved from "what is a BBS and why do people do that" to "how can I play - I'm not very technically oriented" and I think that is a notable shift in public perception. It is very difficult for people who have not been online to get past the technical awareness of dialing modems and the concept of simply "fast letters" and "free software" to a larger awareness of an entire social environment in which they are currently barred from participation. To put these numbers in perspective, while there may be over 11 million dialing bulletin boards, over 113 million voted in the election this past November. And I lay a heavy responsibility on the technically elite among those online to lower the technical barriers to participation and empower those with little interest or ability in technical matters to get in the game. That is the challenge to the online community today, and largely the subject of Boardwatch Magazine.

Jack Rickard

Jack,

I just received the OneBBS issue in the mails today. I'll add my congrats to those who've said you threw a successful show. I'm looking forward to next year's show!

In the current issue you speculate about a new SkyTel service and wonder how long it will be before we bring a BBS and alphanumeric pagers together. Well, it's been about a year ago when Sparkware released the programs that let you interface PCBoard with alpha pagers. We have produced a program named "The Pager Engine" that lets you send text from your computer to an alpha pager. We also released a program that can scan PCBoard message bases for messages addressed to "PAGER" and can send the text to the pager. I've handled customer support calls from our local state fair from messages left on our customer support BBS and sent to the pager. My system also tells me when we sell Qmail Doors or 1stReaders over my alpha pager too. I know of several sysops who use our program to monitor their system events while they are not present.

If you'd like more info about how all of this works please give me a call at the office. My number is (615)230-6245. If you use an alphanumeric pager then it's quite possible our program will work with it - the only requirement is that your pager company use the Motorola "IXO" protocol (which is an industry standard). I'll be happy to set you up with a copy so you can find ways to interface your PC with your alpha pager.

Sparky Herring

Sparky:

I can think of any number of applications where pager notification could be put into play. You actually have your pager beep you when your system sells a Qmail or 1stReader? I hope that after our December cover, it sounds like a whistle. May your pager beep incessantly. I would bet you would have fun with one of those vibrating pocket pagers.

Jack:

As always, a provocative issue. I got a good chuckle from "BATH TIME" and "PRETTY GIRL" on the first page. Boy, sure made me want to log

in immediately and download pictures. Almost as exciting as the eSOFT CREW...

Your editorial confused me. You say that you "don't believe that the case law covers this extension of right of copy to a right to dictate how and when you do what." Why don't you believe it? Software is licensed, not sold. The license is agreed to by both parties. Either party can make as many dorky requirements in the license as they want. If the other party doesn't like it, they don't "sign" the license.

You seem skeptical of Playboy's rights over scanned images. If I scanned my copy of Boardwatch, ran it through an OCR, and sold it for less than you do for your electronic version, you'd be rightfully pissed. And it would be illegal. The copyright law is particularly clear here: the copyright owner has the exclusive right to prepare derivative works from the original. A scan of a photo is certainly a derivative work. The case law has almost always sided with the owner of the original; I know of no cases where it got shady if the thing represented was immediately recognizable, such as in the case of Event Horizons, home of BATH TIME.

I'm glad to hear that Jon Larimore of GLIB "has never been gay at you." Great choice of prepositions. And you deny that you're a good ol' boy! I guess I'm just being liberal at you here...

My take on the US Robotics story is that I will never use or recommend one of their modems again. They are clearly lying. Unless they can show even scant evidence of the existence of the Trojan horse or of their copyright protection, they should be scorned.

Great article on ISDN.

Thanks for running the Hayes ad. Now we all know what a bunch of lying dweebs they are.

Great graphics in the Supra ad. Are We Connecting Yet?

Still love the magazine and think that I'm responsible for at least five other people's subscriptions. Keep up the good works! Gotta go, it's bath time.

Paul Hoffman

Paul:

I would call that a binary personality - pretty black and white impressions. My world tends toward the 256 shades of gray unfortunately.

Bath time is history. There was a bit of communications confusion that led to that but it is not what Boardwatch is about and there will be no further bubbles in the future.

On copyright issues, I don't see them as clearly as you do - the point of the editorial. I just returned from a National Academy of Sciences conference where we all strained mightily to map real world laws and analogies to the online experience and I'm persuaded there are as many mis's as fits. One school of thought is that there is nothing new under the sun and existing copyright laws translate easily to the online world. The other, of course, is that new technology that allows making thousands of copies and delivery of them globally in minutes changes the game. Which side of this you fall on tends to depend on your level of wishful thinking and whether you are a producer or consumer of creative works. I'm willing to concede that it could eventually come down either or any way. As to your point about software licensing, software is sometimes licensed, and sometimes sold, and no one signed anything in most cases. That's part of the conundrum.

I can easily recommend and use a USSR modem again. They're good modems and we use them. The company had a bit of a marketing slip, and instead of making hay while the sun shines, someone panicked. I took exception to their reaction with the harangue about copyrights and Trojan horses, but it's about limited to that. I would note that a number of readers take exception to things we do

in Boardwatch - i.e. bubbles bath time adventure - but I hope they don't throw the baby out with the bath water so to speak. Take a powder - relax. Some people got a good deal on a USSR modem. USSR issued a stupid blurb. Life goes on.

Likewise, Hayes may have overplayed their hand on the TIES issue with sensational ads. But there was a technical issue - and one difficult to publicize that they felt should be heard. I happen to come down on their side technically - who wants the SECOND best escape sequence algorithm when by far the majority of modems available, including ANY that use the Rockwell chip set, already do it well using the Hayes escape sequence.

Happy bath time..

Jack Rickard

Jack:

I'm Arcady Khotin from St.Petersburg, Russia. Assistant professor of Computer Science at the Institute of municipal and government management and Clipper Users Group's President.

Jack, I heard a lot about the fine magazine 'Boardwatch' you are running, but my first REAL meeting with it was just a couple of days ago, when one of your subscribers, Jeff Bennett from New York (Havppavge), NY brought to me a sample copy. He got it from you recently. It was back issue of May 1991.

Boy, was I impressed! It looks like you covered so many of the topics I looked for for ages, and the approach was so careful and simple, I read all issue from top to bottom in one gulp! And you even touched the issue of xSoviet BBSing! I can imagine how informative other Boardwatch's should be!

I used to run BBS for about a year - it was FIDO board, 2:5030/8. My student Michael Pogrebniak used to be a SysOp and I was his Co. At that time I worked with St.Pete's branch of JV

Dialogue. Now I changed job and with it gone was my BBS, but Mike is still running it - for the different organization, and I still have account at it.

My Clipper Users Group is 200 strong, about 30-50 at every meeting. We work closely with Computer Associates Moscow office (used to be Nantucket before the acquisition) and are about to set up our own BBS. So far, we are running several echo-conferences at one of the local boards - SoftScribe BBS.

Jack, you got me hooked. I fell in love with your magazine and want to read it! Unfortunately, I'm not in a position now just get out my vallet and subscribe - with current \$/rouble rate it'll take my 5 month salary. Look, why don't you give us, a CUG of St.Petersburg complimentary subscription? I talked about it with Esther Dyson (she is supplying us with her Release 1.0 and RelEast) and she advised me to beg on you.

May be you'd be interested to hear news from my part of the Globe in return? I'm avid user of BBS and Internet (Relcom) over here and can keep you posted of the news we have. We are already bigger then European part of the Internet and have more room to develop. Closed networks are mushrooming everyday, alternate Networks are created, etc. This country is experiencing not only decline and fall in economy, but boom in Networking.

Well, it becomes too long. Many thanks for the great magazine and please consider my request. Hope to hear from you.

Best regards.

Arcady Khotin
St.Petersburg, Russia,
E-Mail: agh@nwpc.spb.su
Arcady.Khotin at 2:5030/8

Arcady:

Hey, if it's ok by Esther, it works for me. We've had a little difficulty getting timely mail delivery into Russia,

but we'll add you to our subscriber rolls and the issues do generally get there eventually.

In return, I'll take you up on your offer to provide us with a monthly report on the state of networking in Russia. You may deliver it by e-mail to jack.rickard@boardwatch.com, and we'll pass any interesting items onto our readers in the pages of Boardwatch. What's the best way for the average Russian to get access to the Internet? Are there any particularly interesting bulletin boards in St. Petersburg? Boardwatch readers want to know.

Jack Rickard

Dear Mr. Rickard:

Multi-Tech Systems is a manufacturer of modems and other data communications products and systems. Although we are not as prominent in the BBS community as some of our competitors, we are one of the largest modem makers in the industry (1992 sales will exceed \$80 million). My reason for writing to you is twofold. One is to introduce ourselves. The other is to discuss your coverage of the Hayes/Multi-Tech escape sequence patent litigation and related subjects in recent issues of Boardwatch.

First of all, since you've covered the modem escape sequence wars involving Hayes and Multi-Tech and others, and probably have received Hayes' White Paper on the topic, I thought you'd like to have OUR White Paper. A copy is enclosed. It is also available for downloading on our BBS, at (612)785-9875.

Secondly, I have a copy of some pages out of what I believe is your October issue (or perhaps it's an earlier issue). I also have your December issue. In the October issue, in a section entitled, "Hayes Opens Guns Over Escape Sequence Patent", you expressed your view that "Hayes will win the war over escape sequences", along with similar views on related topics. In the December issue, you characterized the Court proceedings

as having mixed results. As you might expect, we strongly disagree. We don't expect Hayes to win the war, nor do we feel they're even winning the battles, including the latest one in Court where they were enjoined.

I suspect that one of your sources of information on this topic is Hayes. Since we've never spoken (my fault, not yours), I would have to conclude that you're not getting the full story. Knowing Hayes, I would also suspect that they're giving you an inaccurate picture of the issues and events (e.g. "Court clears way for Hayes education campaign", etc.). Rather than get into specifics, I would simply suggest that you read the enclosed White Paper. We feel that it provides more current and accurate (and convincing) picture of the situation. Perhaps you could then revisit this subject in the next issue of Boardwatch.

Also, in Boardwatch you have twice informed your readers that they could download Hayes' test files, and you have provided Hayes' BBS phone number to aid them in doing so. In the interest of fairness, you might consider informing your readers that Multi-Tech's White Paper can be downloaded from our BBS (14.4k, 9600 or 2400 bps), at (612)785-9875.

Finally, I have enclosed some additional materials on Multi-Tech, our products and the lawsuits. I apologize for not providing them to you earlier.

Thanks for listening!

Sincerely,

Thomas E. Heimerman
Director/Sales & Marketing

Dear Mr. Heimerman:

I do appreciate your letter and package of materials. We're most pleased to publish BBS numbers where and how we find them, and I have no problem with making complete information on both sides of this issue available to our readers.

Actually I had read several items

outlining Multi-Tech's position, as well as your White Paper, along with information from Hayes, and of course their White Paper. Were I to depend on the largess of public relations departments in vendor companies to stay informed, Boardwatch readers would be six months in arrears on everything. But we were remiss in not publishing your BBS number in the earlier stories.

Lawsuits can be time absorbing and emotionally draining. Usually the participants become preoccupied with the battle and for some reason assume that the rest of the world is as interested in all the legal wranglings as they are. From our perspective, the question becomes most purely a technical one. Your White Paper is long on listing the heinous crimes of Hayes in the marketing arena, and short on technical information. I understand that Hayes and Multi-Tech are both trying to publicly explain this situation to many customers who are not particularly technically accomplished. Our readers tend to be a bit more inquisitive into precisely how the technology works, and somewhat less interested in who owns what market share.

Our view of escape sequences revolves entirely on technical issues. Virtually the entire technical case made in your White Paper rests on the acceptable level of risk posed by the TIES escape sequence and the acceptability of the level is entirely defined by the statement that you've sold 60,000 modems and no one has complained about them. This is, in my view, an entirely unacceptable position for an engineering and design company to take and it startles me to see it actually cast into print. You essentially abandoned the Heatherington 302 escape sequence for legal reasons - not technical ones.

The problem is that in the day to day field of passing bytes through the night, things are not nearly as perfect as modem manufacturers would have us believe. We review literally hundreds of modems each year - most of them broken. We've watched as BBS operators and BBS software vendors have virtually assaulted modem

manufacturers, reputable market leaders mind you, repeatedly into actually getting their products to work in the real world. Most of these issues have to do with predictable response to commands. Actual data passing usually comes down to making a good connection - or not - generally noise tolerance. But LOTS of things happen in the real world of telephone lines. If I transmitted a file and it didn't make the trip, there are about 300 HUNDRED things I could reasonably check before it might ever dawn on me that the modem itself just wouldn't pass a particular file. We assume that the modem treats all data essentially without discrimination and doesn't do better with some files than others.

Most of your angst with the Hayes test kit is that it is an unfair test because they **INTENTIONALLY** put the string of 6 characters that will cause your modem to abort a file transfer and change into command mode. The odds of this occurring naturally are not difficult to calculate. There are 255 possible ASCII characters and the TIES escape sequence requires five consecutive absolute with a sixth somewhat variable. The resulting odds of this data occurring in that order are large, very large, but not unthinkable. In the BBS world, we don't transmit text files at all - or very rarely. Text files are generally precompressed using PKZIP or other compression utilities and we don't know or care what the resulting hash of bytes looks like. It is conceivable we could take a text file that **DOESN'T** contain your escape sequence and compress it to the point where the resulting .ZIP file **DOES** contain the string. Worse, we routinely transmit relatively enormous .GIF images containing binary image data. A sequence of six eight bit bytes has no particular ASCII meaning in this case - except to your modem. It is much more unlikely that anyone would transmit a file, encounter a problem, and come to the conclusion that it was the modem's fault and report it to you, than it is that they might encounter a problem and just give up on that particular file. As I mentioned, there are countless other

things that could cause it as well. There is very little incentive, given the apparently nonexistent price differential between modems licensing Hayes technology and those that don't, to accept yet another variable. Since Rockwell licensed the Hayes escape sequence, the overwhelming majority of modems available use it, and but a scant handful use TIES.

The strength of the Hayes escape sequence is a cross matrix of TWO variables to detect an escape sequence, a fixed guard time AND a series of characters. One second delays do not trigger an escape to command mode. The +++ATn series of characters do not trigger an escape to command mode. Only the two in concert trigger the escape. This multiplies two extremely large "odds of occurrence" to produce one that really is unthinkable. Note that these two variables are not additive, they are virtually exponential.

The TIES escape sequence eliminates the time factor entirely. And it is therefore many orders of magnitude more likely to escape while transmitting a data file than the Heatherington 302 technique. This is simply inarguable. They are not comparable at any level.

More damning is the fact that there are modem manufacturers that have escape sequences that do not infringe Hayes Heatherington patent that are very nearly as good. TIES just isn't one of them. The ZyXEL modem, for example, **DOES** cross the escape character series with time - it just isn't a fixed guard time. They do an ongoing statistical analysis of data rates through the modem. While there are pauses and distortions in data flow, they tend to be very different ones from those caused by a human entering an escape sequence from the keyboard, or even AT commands entered by software programs. Only when the escape sequence occurs in a time flow disruption outside of some statistical norms encountered in data transmission, (actually measured and extrapolated from the **CURRENT** data transmission) will an escape sequence be noted. It easily passes the Hayes test

kit data file with no difficulty - every time. We're not guessing.

The bottom line for our readers and indeed most of the BBS community is not how virtuous or evil you perceive Hayes, how virtuous or evil Hayes perceives you, or how virtuous or evil either one of you may be in your business practices, competitive posture, or even how litigious you may be. They want the best possible modem for the dollar. And another little "gotcha" from an already too complex and error prone communications system doesn't spell value to this community. There does not appear to be any economic incentive to purchase a modem with the "second best" escape sequence built in.

For what it's worth, I thought the bomb ad was a little artless, but it apparently had the effect Hayes was seeking - raising the issue. And it is such a gruesomely technical issue to communicate, I'm going to guess it did so faster than I thought possible. Certainly no one is going to lose their jobs, endanger their company, or damage their data for that matter, and the ad rather seriously overplayed the potential for disaster. The worst that can realistically happen is that you will find a file that you just cannot successfully download or upload, and no immediately rational explanation as to why. And I would find it curiously surprising, without the Hayes ad, if anyone at all ever called you to complain. We simply assume that if a modem will pass one file, it will pass them all and the modem can't possibly be at fault. That said, we have quite enough in the way of little mysteries to deal with without one designed specifically for us.

So, while I'm sympathetic to the outrage at the ad, and even quite sympathetic to the resistance to Dennis Hayes establishing a personal retirement program by shaking down the entire modem industry for a 2.5% royalty, as it stands now, he developed and marketed a product very early in the development of the personal computer, he developed new techniques to deal with some of these issues, and the

U.S. Patent office has issued a patent for it. Until that is overturned in court, there you have it.

Jack Rickard

Dear Jack,

Couldn't resist writing you after reading the first three issues of my Boardwatch subscription.

First of all as a former college professor, I appreciate your occasional forays into the ills of education in this country. See the enclosed letter I wrote to U.S. News and World Report last spring; of course, they did not reply or print excerpts. I can confirm your observations and criticisms are "on target"; your intuition is quite good. Al Gore has an unusual insight (for a politician) into the interface between technology and education. Perhaps we are finally going to get some movement.

I found Bob Freeman's letter (Dec. issue) offensive, as did you. He missed the point entirely. If there are only a handful of native American BBS, whose write up barely fills one page, and you chose nonetheless to feature them with a cover photo and headline, you have done them a genuine service. This positive reaction comes from someone who has taught tribal anthropology in the past, still researches and writes about shamanism and has had sympathetic native American friends and acquaintances. I doubt you got negative reaction from the BBS's involved.

I don't think you should feel in competition for the Pulitzer Prize when you write for the magazine. While not polished, what your writing does possess is clarity, energy and passion - along with what seems to be an awesome technical background. That combination makes Boardwatch not only fun, but seriously interesting and valuable. Your personality as it comes through in the magazine reminds me of an anthropologist named John Greenway who worked out of Berkeley in the 60's and roamed the Australian outback. He produced a

book called *Down Among the Wild Men* which was roundly abused by his professional colleagues. I thought it was marvelous because the ethnographic reporting was responsible and accurate but, above all, his energy and enthusiasm were infectious. In the book, anthropology lost its dull, dry, "objective", academic "interface" and became a flesh and blood involvement with real people. Your reporting of the BBS industry, whether it is a technical review of hardware or software, editorial comments, description of new terrific BBS, etc. has the same quality. Greenway was condemned for his lack of objectivity; he had the audacity to discuss Australian Aborigines as real people, some of whom were quite unlikeable, some of whom were especially attractive personalities. You will be forever cursed for bringing the same qualities to CyberSpace, its hardware, software and people.

You bring the same courage and passion to the infusion of your religious ideas into the magazine. While I agree with some, disagree with others, I do not find you at all offensive. (My own views are ecumenical and go beyond the Judao-Christian realm.) I'm certain you know God has a pair of dice. But do you know how many dots are on the side of each die?

Well, to a matter of more immediate interest, perhaps. I've followed your discussion of NAPLPS with interest. I've found away around having to use PP3 which I suspect would drive many users batty who do not have a computer technology background. Subscribe to NVN - National Videtex Network - (which is NAPLPS based) who will send the NVTEL graphic interface which mediates the connection. The software includes a phone directory (whose limits I don't know) so other NAPLPS systems can be added and dialed up. The only problem with this approach is that it is not free. NVN is \$5.95 per month which might put some folks off. When I entered this game, I always assumed I would pay to go the user friendly route and do so without anger whenever I make that choice. I enjoy the Native American art from

the Russell County BBS and now use the NVTEL interface to call 'em; PP3 sits unused on floppy. (I agree with your puzzlement over their choice of marketing strategy; seems like an odd approach to selling computer art and the copyright issue is not clear. If someone purchased the graphics file which generates a particular picture, can the new "owner" then reproduce it or incorporate it in software, freely? What if such software is a commercial product?)

Hope this makes up a bit for the guy in Maine who sends you hate mail with his renewal check. But then, I'm not a real Mainer, just "from away" (someone who was born and raised in another state).

Warm Regards,

Ben Blumenberg
Waldoboro, Maine

Ben:

Thank you for the very kind words regarding Boardwatch. I don't place nearly the value on objectivity that many do. There are some fields where it is important for good science as a procedural doctrine. But in presenting information, it too often has been used as a cheap replacement for honesty and credibility. Technical information is usually easier to convey from a point of view - any point of view. And as long as the technical information is conveyed in an interesting and readable fashion, what our readers do with our "point of view" is pretty unimportant. For the most part, neither they nor we take it all terribly seriously. But we are enthusiastic in greeting each new development that expands the dimensions of CyberSpace.

I was not aware of the NVTEL program or the National Videtex Network. I believe I'm slotted to pay a visit to an online real time conference on this service in January, but it will be my first visit. In any event, we'll take a look at this terminal program with a great deal of hope. The release of PP3 was an important contribution to introduce NAPLPS to the BBS com-

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munity but we clearly need to get beyond it, and Microstar seems curiously disinterested in completing their good work in this area. I'm convinced that eventually some second tier shareware terminal program on the order of a Telemate or Como will make their place in the sun by incorporating NAPLPS into a capable terminal program. It's possible that a market leader such as Procomm or Qmodem will do it first, but historically that does not seem to be how these things develop. Innovation seems to have a curious affinity for the lean, hungry, and small. And there are still some other options rumbling around out there, including RIP, Fracterm, and a few others.

Jack Rickard

TELEBITS

RUMORS AND TIDBITS

PC prices may get a slight up tick due to RAM memory prices. The U.S. Justice department has charged several Korean firms with dumping memory chips in the U.S. at prices below cost. As a result, a 100% duty has been levied against the firms shipments. The companies have responded by cutting memory chip shipments to the U.S. in half. Memory prices jumped immediately with 4MB rising from just over \$100 to some \$160 in less than two weeks.

McAfee Associates has done very well with their shareware anti-virus utilities SCAN, NETSCAN, and CLEAN. Electronic distribution as a shareware product got them in the door to almost every MIS department in the country. The result is some \$20-\$30 million in annual sales. The company just completed an initial public offering adding some \$48 million to their war chest and making McAfee Associates the first shareware company ever to go public. Rumor has it that the firm is so convinced electronic distribution is what got them there that they are

looking to acquire a BBS software developer as one of their first official acts as a publicly traded company. Likely prospects? Clark Development Company, Inc., developers of PCBoard BBS software or eSoft Inc., developers of TBBS.

Things to watch - VIDEO just got a big boost with the introduction of Microsoft's \$199 Video for Windows. This program allows you to capture, edit, and display video scenes captured with a cam corder and entered via a video capture board. Significantly, you can create videos and distribute them. Others can view them WITHOUT the full Video for Windows package - though they will need to run Windows 3.1. It can't be any time before we will begin to see videos online available for download. But the files won't be small...

Quotables: 90% of winning is being the last to quit.

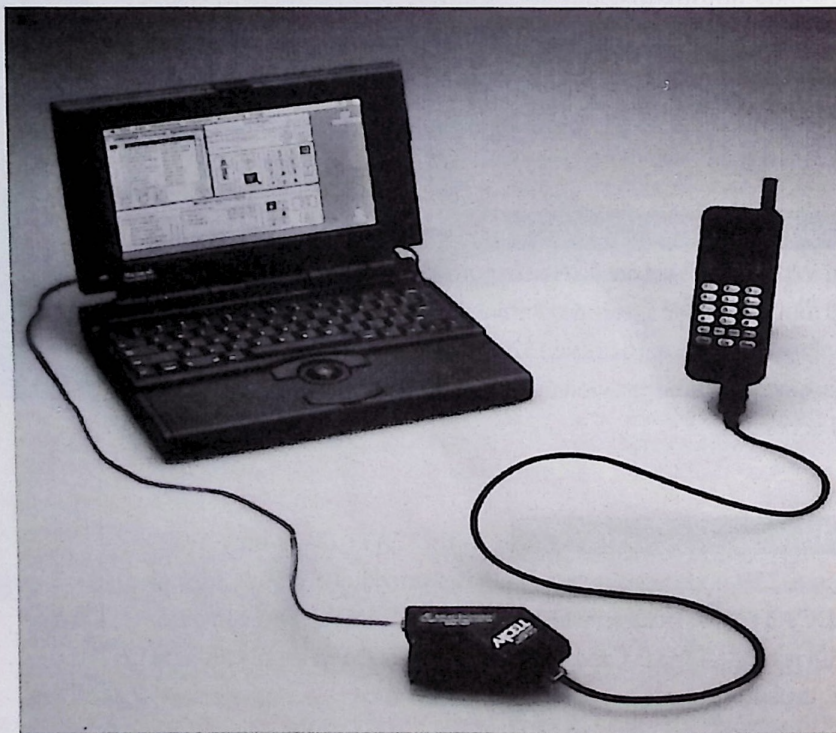
AT&T has announced a further reduction in long distance costs for subscribers to their Reach Out America residential calling plans. Effective

November 26, the long distance carrier will reduce the cost of night/weekend calls to ten cents per minute (\$6.00 per hour) anywhere within the continental U.S.

CELLULAR DATA CONNECTIONS

Cellular telephones are a less than ideal medium for transmitting data. But the urge to connect without wires continues. Many of the solutions revolve around specific radio modem solutions often carrying price tags over \$1500 and usually tied to some specific data service at exorbitant service charges of as much as \$100. Because of the mass production of cellular telephone devices for some nine million cellular users, cellular telephones are available for as little as \$99. Even the latest tiny handset pocket phones are commonly available on the street for under \$700.

Looking at these pocket telephones that really DO fit in a pocket, and laptops that really are five pounds or less with some palmtops coming in at



AXCELL RJ-11 ADAPTER FOR CELLULAR TELPHONES

under a pound, most gadget people are a little miffed that they can't plug one into another and make the connection to whatever data service they desire. Why isn't there an RJ-11 jack somewhere on this pocket phone?

The good news is that now there is. The bad news is that it works with but a handful of telephones, and it requires a device from Spectrum Cellular Corporation of Dallas that itself costs nearly \$400.

A handful of pocket telephone manufacturers have settled on a common external jack for their pocket telephones. These phones include the **AT&T 3730 Portable** and **3035 Transportable**, the **Ericsson/GE Hotline Portable Pocketphone**, the **Fujitsu Stylus Portable**, the **NEC P200/300** and **P201/301** models, and the **OKI 900 Portable** and **800 Transportable** models. Spectrum makes a device they call the **AXCELL** that connects to this proprietary connector plug. It provides an **RJ-11C** jack with tip and ring connection and dialtone for any peripheral that can connect to a normal modular walljack. In this way, you can connect a facsimile machine, modem, or credit card verification device, for example, to one of these pocket telephones.

The device weighs **2.5 ounces** and measures **15/16 X 2 1/4 X 3 7/8 inches**. It's powered by a 9V alkaline battery. The **AXCELL** is priced at a very proud **\$395**. Spectrum Cellular, 2710 Stemmons Freeway, 800 North Tower, Dallas, TX 75207; (214) 630-9825 voice; (214) 630-1612 fax.

14.4KBPS POCKET MODEM

Virtually every modem manufacturer has introduced a **CCITT V.32bis** modem sporting **14.4kbps** data transmissions and many today are including fax features. But the miniature pocket modems commonly used with laptop computers

have lagged a bit in introducing high speed connections - a scant handful on the market and usually at a premium price. Practical Peripherals has announced a new pocket modem titled the **PM14400FX** featuring **14.4kbps** data plus fax in a 4.2 ounce package measuring **2.3 X 4.0 X 1.2 inches**. And the new model sports a number of surprising features.

The **PM14400FX** includes six pages of online help text coded into the Read Only Memory (ROM) in the modem. For laptop users on the go, this handy feature eliminates the search for the manual in many situations. The modem can also translate alphanumeric telephone numbers (i.e. 1-800-FXMODEM) entered from the keyboard to their numeric equivalents and it can recognize telephone calling card prompt (bong) tones. It also features send/receive Group III fax function at 9600 bps and is compatible with Class I and Class II PC fax software. The **PM14400 FX** is powered by four AA alkaline batteries or AC power. The DOS version (**\$499**) comes with cable, AC adapter, and **Quick Link II** fax/terminal software. A Mac version with appropriate software will be available for **\$529**. Practical Peripherals, 375 Conejo Ridge Avenue, Thousand Oaks, CA 91361; (800) 442-4774 voice; (805) 374-7200 fax; (805) 496-4445 BBS.

HAYES LAUNCHES FLEET OF NEW PRODUCT ANNOUNCEMENTS

Hayes Microcomputer Products appears to be launching a new assault on the online market with a fleet of new products and pricing announcements. Most notably, there has been some obvious efforts to enhance their BBS operator discount program.

With delays for getting US Robotics modems actually delivered still hovering around eight weeks and more, many BBS operators are looking for an option. We're hearing reports of Hayes verifying bulletin boards and shipping modems **THE NEXT DAY** in some cases and in all cases within a week. Even better, their new Hayes Ultra and Optima 144 models, carrying a sysop dis-

count price as low as \$299 appear to be working flawlessly. The result could be a serious defection from the ranks of those BBS operators who previously considered U.S. Robotics to be as much a religion as a modem vendor.

In new product announcements, Hayes has introduced the **Hayes Smartmodem OPTIMA 14400 FAX 144 Pocket Edition**. This is a very unusual modem - ostensibly a pocket modem but a fairly hefty one at 8.5 ounces with a very unusual case design. The effect is of a hybrid between a desktop modem and a travel modem. It will work from AC or battery power, and is quite portable. Functionally the modem is very much like the **OPTIMA 14400 FAX** model featuring **V.32bis** 14,400 bps data connections with **V.42/42bis** error correction and data compression as well as **MNP5**. It also sports Group III fax transmissions at rates up to 14,400 bps under the V.17 standard as well as the more common 9600 V.29 fax transmission.

Significantly, this model sports a mode called Hayes AutoSync that allows the modem to make synchronous modem connections to corporate mainframe computers. While most of the BBS community operates entirely in an asynchronous communications mode, many existing mainframe systems still require synchronous communications to make the connection. The Pocket Edition allows this from a laptop quite easily.

The Pocket Edition comes with cables, battery pack, AC adapter, the **Smartcom EZ** and **Smartcom FAX** software programs. The modem is scheduled to ship during the first quarter of 1993 at a list price of \$599.

"In addition to being lightweight and easy to carry, the modem is also very convenient and appropriate for the desktop," said Hayes President Dennis C. Hayes. "OPTIMA Pocket Edition is perfect for employees who are always in and out of the office. With features like Hayes AutoSync users can now perform synchronous com-

HoloNet Announces Support For QWK Mail Readers!

HoloNet BBS provides easy access to the world's largest interactive network—the Internet. Some of our features are listed below, but the best way to find out about HoloNet is to call for a *free* demo and try it for yourself.

QWK Mail Reader Support - HoloNet members now have access to Internet E-mail and over 35+ MB of USENET articles on 3,500+ topics daily using off-line QWK mail readers.

Easy to use - Our custom menu based interface is easy to use.

Convenient Access - HoloNet is a local call in over 850 cities.

Personal File Area - HoloNet members have their own file area where they can store and work with files and mail.

Internet E-Mail - Members have an Internet E-mail address similar to: member@holonet.net Use it to exchange mail with major networks and other computers around the world.

Internet Talk - This services provides split screen real time talk between two people. This allows you to see what the other person is typing as they enter it.

Internet Relay Chat - IRC is the world's largest real time discussion. People communicate from many countries and languages. IRC averages over 850 users online day and night.

Internet Telnet - Log into other Internet computers. For example, to play games or visit a super-computing BBS.

Internet FTP - Transfer files with other Internet computers.

Internet Archie - Archie makes it easy to find files stored on thousands of FTP servers around the world.

Internet Gopher - Gopher makes it easy to find people, information and services.

Customer Service - Our customers are our most valuable asset and we will go out of our way to help them. We know communications and our products. We put our expertise to use for our members in both customer support and in developing new services.

Access HoloNet through our Berkeley number for as low as \$2.00 per hour. For an additional surcharge, HoloNet can be accessed via national dial-up numbers— a local call in 850 cities.

FREE HoloNet DEMO
Modem to 1-800-NET-HOLO for your closest access number!



Link Your BBS To The Internet

You can have Internet E-mail and USENET groups for your BBS users. After setting up a UUCP account with HoloNet, your BBS can call in, whenever you want, to exchange mail and USENET articles.

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If your BBS supports UUCP or if a UUCP gateway is available for your BBS, you can have Internet E-mail and USENET news at regular HoloNet rates with a one-time setup fee of \$50.00. For high-volume feeds we provide high-speed flat rate UUCP access via our Berkeley, California access number for \$125 per month.

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ZyXEL U-1496E
 V.32b/42b/FAX

HS AA CD OH DTR DSR CTS TXD RXD EC SQ TST

LAN DATA /
 LOG VOICE

14.4 Kbps - V.32bis + V.42bis High Speed Modem/Fax

Model	Price	Fast Renegotiation Online Fall Back/Forward	Remote Configuration	Call Back Security With Password Protection	FAX V.17 14.4 Kbps S/R	Caller ID	Distinctive Ring
Digicom 9624LE+	\$695	NO	NO	NO	NO	NO	NO
Practical 14.4 SA	\$549	YES	NO	NO	NO	NO	NO
Microcom QX/4232bis	\$899	YES	YES	NO	NO	NO	NO
Hayes Ultra 14.4	\$999	YES	NO	NO	NO	NO	NO
U.S. Robotics Courier V.32bis	\$995	YES	YES	NO	NO	NO	NO
Telebit T3000	\$949	YES	YES	YES	NO	NO	NO
Multimodem MT1432BA	\$899	YES	YES	YES	NO	NO	NO
ZyXEL U-1496E	\$469	YES	YES	YES	YES	YES	YES

14.4Kbps-V.32bis/V.32 + V.42bis/MNP® 5, V.42/MNP 4,3

**Now with
 16.8 Kbps &
 Voice Capability**

The features you want in a High Speed-14.4Kbps Modem/Fax. At nearly half the Price!

ZyXEL's U-1496E offers all the standard features available in a 14.4Kbps- V.32bis+V.42bis modem/fax with DTE speeds up to 57.6Kbps. But you'll also find features you'd expect in only the "top-of-the-line" modems. So why pay more for the features you want, when you can get the best value from ZyXEL for less?

Caller ID/Distinctive Ring

Displays the caller's phone number, time and date stamp directly on your screen, and responds to the distinctive rings for incoming fax or modem calls.

Enhanced FAX

14.4Kbps G3 fax with automatic detection of fax or modem calls. Automatically receives, stores and/or prints faxes with our FREE ZFAX software.

Automatic Fast Rate Renegotiation

Online automatic speed fall-back/fall-forward allows the highest throughput achievable during poor line conditions.

Multi-Level Security

Security password protection and automatic call-back features are designed so only authorized callers can access your system.

Nonvolatile Memory Storage

Store up to 4 user configuration profiles in NVRAM, plus up to 10 user phone numbers and their associated passwords.

Software/System Compatible

Supports V.25bis autodial and enhanced AT Command Set, ensuring compatibility with popular communications/fax software. Available with MAC™, Windows™ and DOS fax software packages.

Guarantees

We offer a Full 5 year Parts and Labor Warranty, a 30 day money back guarantee and full BBS technical support line.

Once you've weighed the options, you'll agree: ZyXel's U-1496E offers the best value for less than any other modem/fax in its class. So, don't hesitate. **Call Today.**

ZyXEL USA
(800) 255-4101
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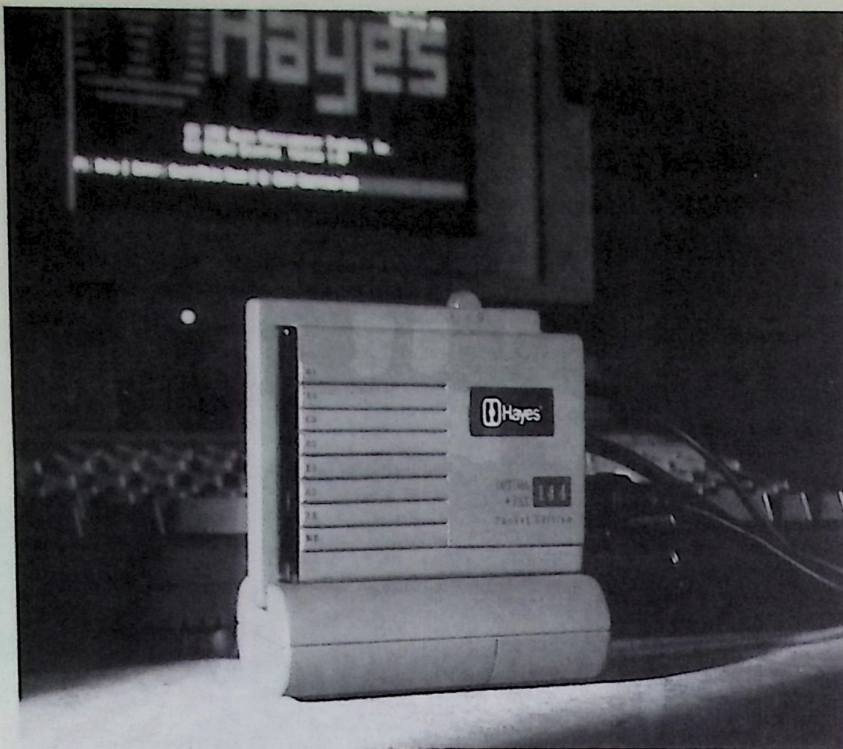
TEL (714) 693-0808
 FAX (714) 693-0705
 BBS/Tech.Support
 (714) 693-0762



Visit Us At Comdex Fall '92 North Hall #4644

Editor's Choice: ZyXEL U-1496E
 German Edition, 4/92

ZyXEL USA, 4920 E. LaPalma Ave., Anaheim, CA 92807
 All brand names and trademarks are the property of their respective owners.
 Comparison chart was completed in May, 1992.



Hayes Smartmodem OPTIMA14400 FAX 144 Pocket Edition

munications from a laptop computer to the corporate mainframe."

Another interesting new product from Hayes is their first PCMCIA modem - the **OPTIMA 24 + FAX96** for PCMCIA. PCMCIA (Personal Computer Memory Card International Association) bus is becoming quite the standard for laptop and portable computers to add memory and a variety of peripheral devices - essentially an expansion bus. The **HP95LX** palmtop computer and the **Poquet** notebook, for example, sport PCMCIA slots.

Hayes' first venture into PCMCIA offers 2400 bps connections with V.42/42bis and MNP5 AND 9600 bps fax transmit/receive capabilities. The device is a tiny credit card-sized modem that plugs into a PCMCIA slot and connects to the telephone via a standard RJ-11 modular plug. The new device will be available during the first quarter of 1993 at a list price of **\$399**. With the growing availability of 9600 and 14,400 bps pocket

modems, while the PCMCIA form factor is very interesting, we don't know that it merits **\$399** for a 2400 bps modem.

The company has also introduced an internal circuit card version of its OPTIMA series with the **OPTIMA 144B +FAX144**. This modem features all the data and fax connections of the OPTIMA 144 and the pocket edition, including the Smartcom EZ and Smartcom FAX software, V.42/42bis, and MNP5 in a CCITT v.32bis 14,400 bps modem. But additionally, it includes the Hayes **Enhanced Serial Port (ESP)** function - now referred to as the Communications Accelerator. Many PCs still sport NS16450 Universal Asynchronous Receiver/Transmitter (UART) serial ports and some have serious problems with higher data rates encountered with the new high speed modems. Nearly two years ago, Hayes introduced an ESP serial card featuring NS16550 UARTs and a 1 KB buffer with a coprocessor on it to perform direct DMA data transfers. The new **OPTIMA144B +FAX144**

has this ESP technology built in. It also includes a Hayes ESP Driver for Windows 3.1. The **OPTIMA 144B + 144FAX** will be available at a list price of **\$519**.

Finally, Hayes has introduced a Windows communications program titled Smartcom for Windows version 1.0. The software is available in English, Spanish, Italian, French, or German and includes support for the Hayes ESP Communications Accelerator, the Hayes ISDN Adapter, and TCP/IP Internetworking. It also includes a text editor allowing callers to incorporate ANSI graphics into messages quite easily.

All Hayes modems come with a two year warranty. Those who purchase modems directly from Hayes by mail or via the Hayes Online bulletin board system at **(800)USHAYES** or **(404)HIMODEM** within the first 90 days will have that warranty extended to a full five years at no additional cost. Hayes Microcomputer Products, Inc., 5835 Peachtree Corners East, Norcross, GA 30092; **(404)441-1617** voice; **(404)441-1238** fax.

GLOBAL POSITIONING SYSTEM FOR PALMTOP COMPUTERS

A big part of getting anywhere in life is determining where you were when you started. Thanks to a series of some 24 navigational satellites put into orbit around the earth, that's becoming a much less relative question.

Termed the **Navstar Global Positioning System**, this series of satellites, when all are finally launched, will orbit the earth at 29,200 kilometers in six orbital planes inclined 55 degrees from the equator. Each satellite sports its own atomic clock to provide ranging signals on two L-band frequencies to receivers on earth. Five satellites should be within view from any point on the planet at any single time. The result is a navigational location system operated by the U.S. Air Force Space Command

in Colorado Springs, Colorado that can allow anyone, anywhere on the planet to determine precise location to within a few meters. This service was extremely useful to the U.S. military during operation Desert Storm, and is increasingly proving a boon to civilian users.

The U.S. Coast Guard operates the GPS Information Center in Alexandria Virginia providing info on satellite conditions, schedules, and status. This information is available on their 9600 bps BBS at (703)866-3894. GPSIC, US Coast Guard ONSCEN, 7323 Telegraph Road, Alexandria, VA 22310; (703)866-3806 voice; (703)866-3825 fax.

The key to effectively using this service is the cost of the GPS receivers. Most of these we've discussed in Boardwatch before were priced at nearly \$5000 and often did not allow any connection to a personal computer. Recently, we came across a package by GESSA, a Swiss firm that calls their product the **GPSpac**. It's designed to work with the **HP95LX** palmtop computer and appears to be priced at around \$1550. This is the lowest priced GPS receiver we've found that DOES sport PC connectivity for data. And the HP95LX makes an excellent portable position logging machine. It's light, very portable, and it connects well to standard PCs to exchange data.

The heart of the GPSpac is a sensor based on the **Rockwell NavCore V GPS receiver** with built in antenna. This is a five channel receiver capable of receiving data from all five satellites that may be within view at any one time. It connects to the **HP Data Link Cradle** (HP F1007A/B). The HP95LX plugs into the cradle and obtains position data from the Rockwell unit. The GPSpac software can be loaded into the HP95LX either from a memory card, or from a floppy via another PC.

The package must be used out doors to gain an accurate reading, and it can take several minutes to obtain a fix. The system will give you your altitude in feet, your horizontal ve-

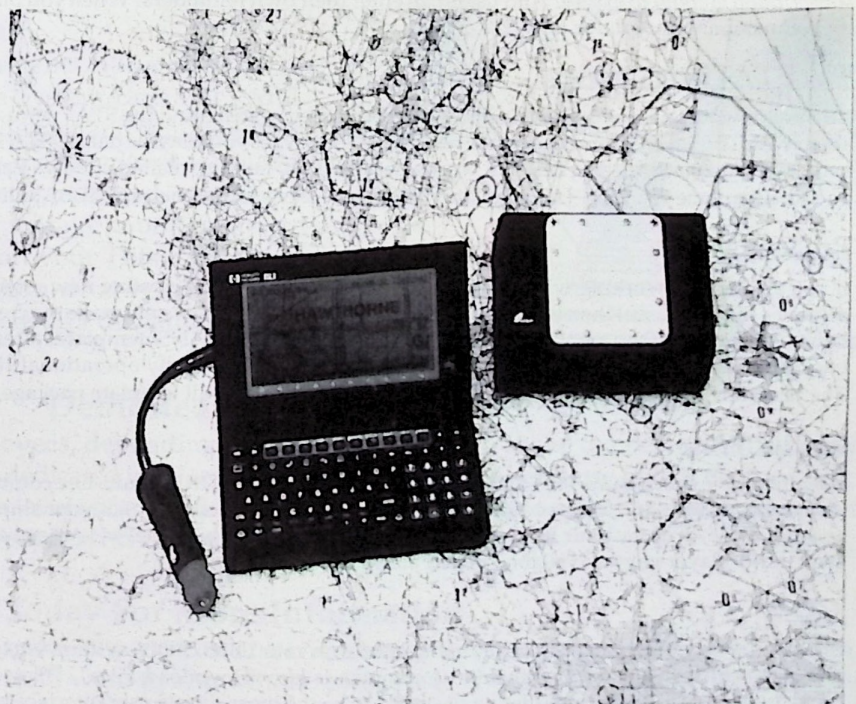
locity, true track, vertical velocity, date/time, and latitude and longitude within an accuracy of about 25 meters. It can be used from trains, planes, or automobiles easily. The software provided also provides navigation and data logging functions. Data can be logged directly into Lotus 123 spreadsheets in the HP95LX.

While still a bit pricey at \$1550, the Global Positioning System is one of those devices gadget gurus just can't keep their hands off of. GESSA can be reached at GESSA, 45a Route des Acacias, CH-1227, Geneva, Switzerland; 41-22-342-78-06 fax. The U.S. distributor for the GESSA GPSpac is PalmTree Products, Inc. They offer the GPS sensor, software necessary to communicate with the 95LX, an HP cradle, a battery pack for remote operation, cables, a foam-lined transit case and manuals for \$1550. Contact Gregg Brasso, PalmTree Products, Inc., 145 Washington St., Norwell, MA 02061; (617)871-7050 voice; (617)871-6018 fax.

EXTENSION PHONES FOR CELLULAR TELEPHONE

Many years ago, it was common to have a single telephone in your house. Over time, it became increasingly common to have extension telephones added. These phones were simply wired into the same lines coming in to the house, and all extensions worked from the same telephone number. But of course they allowed you to answer the telephone from whatever telephone set you were nearest to. Somehow, all of this got out of control and sometimes these days it seems like I have telephones chasing me down the hall. But it is convenient.

Imagine my surprise then when the cellular telephone representative patiently explained to me that the cell phone in my hand was the only one in the world that I could have on that account. It was the lone phone in the universe that would ring when that particular number was dialed. And there was no way to add any extensions.



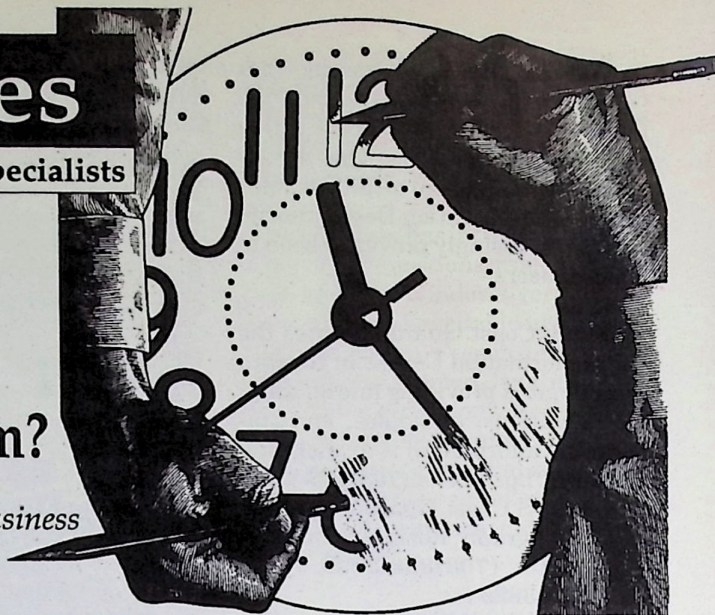
GPSpac for HP95LX
Position to within 25 meters

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String!

String! the ultimate in user reminder programs. With STRING you can enter reminders anytime for display at a later date, and forget them. You can enter up to four lines of text, or call a file to be displayed (ANSI and ASCII). You can use STRING to notify users when their subscription is about to expire. And users can enter their own reminders. When you purchase String! for only \$69.95 you can also purchase it's companion, Header!, for only \$20.

The STATistics Series

All SysOps want to know as much as possible about their systems and the STAT series is designed to report everything you want to know about your TBBS system and user activities. TSTAT analyzes your dayfile data, USTAT analyzes your user activities, FSTAT tracks upload and download statistics and MSTAT works with TIMS to analyze mailer activity. Each STAT module is \$39.95, package pricing applies on more than one module. (And look for TBILL, the most comprehensive TBBS billing utility available.)

ProMenu

If you are tired of working with cumbersome ANSI editors when creating new menus for your TBBS system (or ANY system that can display a file as a menu) then you need to look at ProMenu. It will not only make the creation of ANSI menus easy, it will save you countless hours when editing the menus created. And with well over 100 ANSI templates already available there are thousands of possible menu backgrounds! This stand-alone product is well worth trying, a fully operational 10-day demo is available for download on request. The program, with limited templates, lists at \$59.95. With the full template package, \$89.95.

Stellar Wars

An interactive space game for TBBS/TDBS systems, SW offers TRUE multi-line combat. You can maneuver your ship, fire on the enemy and destroy same. It features complete planet environments, you can pilot your ship from star system to system, select where you want to land, trade, drop by your local space port to gamble or purchase fuel as well as better weapons and ship equipment! One of the best new multi-player games available, priced at \$129.95.

GO-2

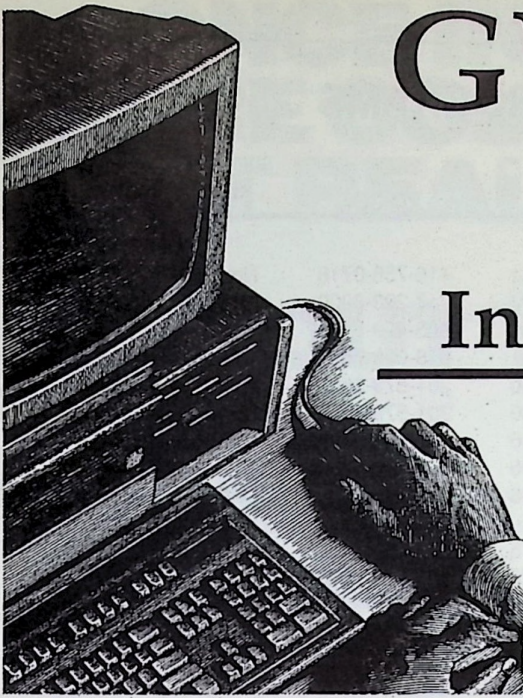
Soon you will be able to use multi-key menu entries on your TBBS/TDBS system! No longer will users be limited to single key choices from a menu, with GO-2 users can enter true commands like "Download Files", "Play Blackjack", "Jump to Chat", "Help", "GOTO Tech Support", etc. This program is being designed to be the most simple user interface possible, and simple for the SysOp also! We hope to release GO-2 in early August.

Call our Sales and Support BBS for full demonstrations on over 100 TBBS/TDBS add-on application, entertainment and utility programs



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The Only Choice In Telecommunications

GW Associates was formed several years ago to promote and support the growing need for *Information Management systems* (BBS). Our goal has always been to make communications easier. We've always had the opinion that many seem to work very hard to make "telecommunications" some kind of mystery, a gray area where common man should never wander. And it really can be made simple. We'll be happy to show you how!

Multi-User Environments

Our **ONLY** business is telecommunications. We install commercial information management systems, we install telecommunications networks linking offices across the country using personal computers and inexpensive automated software. And we sell everything from single line TBBS software to 64 line "plug and play" packages.

Cost Effective

We remotely maintain commercial BBS systems. It's a good bet that you have never hired an employee to be a System Operator. And any time that an employee spends in the design and maintenance of a system is taking time away from the work that employee was hired to do! What happens when the employee is promoted, transfers or resigns? Can you afford to hire and train, or take another employee away from assigned tasks? We can support your TBBS system remotely at what might be a lower cost than what you will pay for an employee benefits package, and we won't demand paid vacations or coffee breaks.

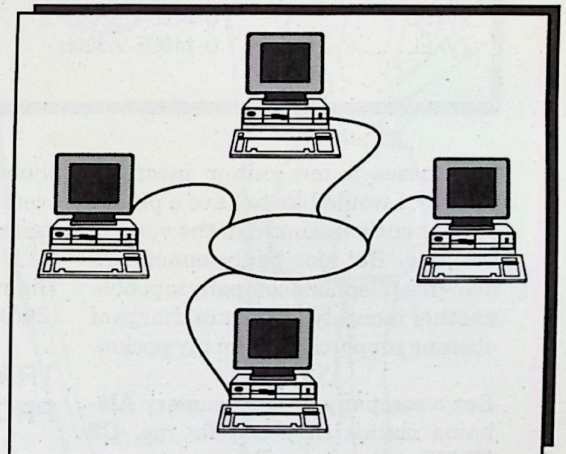
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GW Associates has from one to five employees, depending on need. It is set up to make the best use of available expertise, and because our business is fully dedicated to telecommunications we make good use of that technology. We work with programmers with various levels of expertise and various capabilities and do our best to match the requirements of our customers with the people who can best fill those requirements.

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If there's anything we can do to help you make better use of any communications tool, please ask. If you're not sure if you really have a need for a system and want to know more, please ask. We're here to help in any way we can. We hope you'll give us the opportunity to help. If you need information on prices or just need information on communications, don't hesitate to ask for help. We enjoy what we do and we'll enjoy discussing your applications and needs.

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SYSOP MODEM DISCOUNT PROGRAMS

V.32 and V.32bis Modems

VENDOR	MODEL	LIST	SYSOP	BBS	VOICE	FAX
ATI Technologies	ATI V.32	\$699	\$350	416-756-4591	416-756-0718	None
Cardinal Technologies	9600V42 V.32	\$699	\$269	717-293-3074	717-293-3000	None
Computer Peripherals	Viva 9624e V.32	\$349	\$249	805-499-9646	805-499-5751	805-498-8306
Galaxy Networks	UFO V.32bis	\$999	\$299	None	818-998-7851	818-998-1758
GVC Technologies	FM-9696/144V V.32bis	\$689	\$413	201-579-2380	201-579-3630	201-579-2702
GVC Technologies	SM-96V V.32	\$599	\$329	201-579-2380	201-579-3630	201-579-2702
Hayes Microcomputer	Ultra 144 V.32bis	\$1199	\$599	404-446-6336	404-840-9200	404-449-0087
Hayes Microcomputer	Optima 144+Fax	\$499	\$299	404-446-6336	404-840-9200	404-449-0087
Hayes Microcomputer	ISDN System Adapter	\$1599	\$799	404-446-6336	404-840-9200	404-449-0087
Image Communications	Twincomm 9600 V.32	\$299	\$279	None	201-935-8880	201-935-6548
Intel Corporation	14.4EX V.32bis	\$549	\$269	503-645-6275	503-629-7000	503-228-9707
Intel Corporation	9600EX V.32	\$599	\$299	503-645-6275	503-629-7000	503-228-9707
Multi-Tech Systems	MT932BA V.32	\$869	\$435	612-785-9875	612-785-3500	612-785-9874
Multi-Tech Systems	MT1432BA V.32bis	\$899	\$450	612-785-9875	612-785-3500	612-785-9874
Practical Peripherals	PM14400FXSA V.32bis	\$549	\$250	805-496-4445	818-706-0333	818-706-2474
Supra Corporation	SupraFAX V.32bis	\$399	\$249	503-967-2444	503-967-2400	503-967-2401
Supra Corporation	SupraFAX V.32	\$299	\$199	503-967-2444	503-967-2400	503-967-2401
Telebit Corporation	T3000 V.32bis	\$949	\$399	None	408-734-4333	408-734-3333
U.S. Robotics	HST/DS V.32bis	\$1295	\$449	708-982-5092	708-982-5010	None
Ven-Tel	EC96 V.32	\$699	\$439	408-922-0988	408-436-7400	408-436-7451
ZyXEL	U-1496 V.32bis	\$799	\$450	714-693-0762	714-693-0804	714-693-0705
ZyXEL	U-1496E V.32bis	\$469	\$299	714-693-0762	714-693-0804	714-693-0705

This poses a few minor inconveniences. I would like to have a phone permanently mounted in the van for example. But not badly enough to allow the telephone company to gobble another monthly minimum charge of obscene proportions from my pocket.

But a company in Montgomery Alabama claims they can fix me. **C2 PLUS** makes it possible to put two or more cellular phones on a single number. You send them your current cellular telephone and a second one that is either an **NEC, Audiovox, Novatel, or Motorola Transportable**, and basically, they program the second phone to work just like the first one on the same cellular account.

There are some restrictions. Apparently, if you have both phone sets turned on at the same time, neither one will ring. And you cannot use the two telephones to talk to each other. But as long as you use one telephone at a time, you can have more than one

phone on the same account and whichever one you do have on will ring for incoming calls. The service costs **\$199**. **C2 PLUS Technology**, 3174 Mobile Highway, Montgomery, AL 36108; (205)264-0264.

TRANSCONTINENTAL ISDN PROJECT 1992.

Hayes has operated a support BBS for some time, but within the last year they have become probably the first product support BBS to offer ISDN connections. While interesting, this has been a bit premature in some ways since few areas support ISDN service and long distance ISDN has been out of the question. A demonstration termed the **Transcontinental ISDN Project 92** was held **November 16-20** with over **70** organizations around the country participating in ISDN demonstrations. The purpose of **TRIP '92** was to demonstrate that long distance ISDN could be accomplished - it was the "golden

splice" ceremony for coast to coast ISDN.

ISDN stands for Integrated Services Digital Network and represents the next most logical step in data communication speeds for consumers. Using existing wiring to the home or office, ISDN basic rate interface service consists of two 64 kbps digital bearer or B channels, and one 16 kbps D channel. Installing ISDN does require an upgrade to the telephone company central office (CO) and the addition of customer premise equipment (CPE) such as an ISDN adapter.

ISDN was first proposed in 1979, but implementation has been a problem. Although a CCITT standard exists, interoperability between different vendor products has been a problem. In February 1991, Bell Communications Research led an effort to finalize a workable ISDN implementation standard called **National ISDN 1** to solve the interoperability problem. The North American ISDN

ONCE IN A GREAT WHILE THERE COMES BBS SOFTWARE THAT REALLY MAKES WAVES.

GET OUT YOUR SURFBOARD.

DESQview. Synchronet BBS's revolutionary new DESQview **ENHANCED MODE** Enhanced Mode combines the best of multinode and **Ten Nodes One CPU** multiuser technologies providing up to 20 times

improved performance over other BBSs under multitaskers. Intelligent variable timeslicing combined with Synchronet's highly advanced interrupt driven output allows up to ten full throughput 9600bps or 14.4kbps connections on a single 486 PC without expensive coprocessed multiport cards or a special version of the BBS. Synchronet is also fully networkable. So building a high-speed full throughput multiuser BBS just got a lot easier and a lot more affordable. Unparalleled speed, advanced multiuser capabilities, and industry standard external Door/Protocol flexibility are what Synchronet is all about.

CD-ROM Direct Support CD-ROMs are the fastest growing addition to today's BBS, yet multiuser access to CD-ROMs and Jukeboxes can create severe bottlenecks virtually crippling throughput and usability. Synchronet's built in CD-ROM support makes multiuser contention problems a thing of the past by automatically and transparently buffering CD-ROM requests to hard disk. But Synchronet doesn't stop there. With even more innovative enhancements, such as Alternate Directory Paths and Read Only Intelligence, CD-ROMs are right at home on any Synchronet BBS.

Internal QWK Mail & Networking BBS message networking has virtually exploded across the online industry and Synchronet brings you right into the action with internal QWK packet networking and offline mail reader support. No external module or door is required. QWK packet support is built in! And setting up your network is a breeze with Synchronet's complete easy to use menu driven configuration. Synchronet now supports Fidonet packet networks as well. In fact Synchronet can support multiple networks on different network packet technologies simultaneously!



By now nothing Synchronet does will surprise you, right? Try again. 976/900 automated billing features are built in. No extra hardware, no extra modules to buy. The competition wants to charge you thousands for this capability. We think differently. In fact there are literally hundreds of other leading edge features making Synchronet not only the most advanced and feature rich BBS available but, at \$199 for a 250 node license, clearly the best value as well. If you're serious about your BBS, you and your users deserve the Synchronet Bulletin Board System.



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\$99⁰⁰
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**Free Synchronet Bulletin Board System
demo version available for download.**
(714) 529-9525 2400bps (714) 529-9547 v.32bis/HST

AQUILA BBS

Chicagoland's Largest System

Since 1988

Aquila has filled the computer screens of Chicagoland for over three years, growing from a single modem line system in 1988 to over 25 lines in 1992. Aquila's success over the years is due to the enthusiastic support of our users. New callers are encouraged to download our current file list and electronic mail conference listing. A short guided tour highlighting our system services is also available for new users. All of our information is automatically mailed to you to read in the comfort of your home or office. So pick up your modem and give us a call! You will find Aquila BBS to be the most valuable bulletin board in your dialer.

Programs - Thousands On-Line

Give your modem a workout! We add new shareware and public domain programs everyday. Over 400 programs are added weekly. With more than 5 Gigabytes of on-line storage, we stock over 50 thousand programs. Aquila makes it easy to find the programs that are important to you, by organizing them into 120+ file directory categories everyday.

We cater to the Windows User

With Windows becoming the most popular user interface around, we make an extra effort to keep you supplied with the latest programs and enhancements by devoting a special conference area just for Windows containing 2000+ files organized into 40+ file directory categories.

Our organization and the latest programs make our file areas the most popular around. These are just a few of our most popular categories available:

Diagnostic Utilities
System Enhancements
File Organizers
Word Processing

Computer Games
Music and Midi Sound Files
Computer Animations
CAD Drawing Utilities

Business - Finance - Tax
Novell and Lan Utilities
Database
Programming


Icons - Icon Managers
Wallpaper - BMP's
Multi-Media Related
Fonts - Font Utilities



The AQUILA BBS Team (Left to right: Kevin & Kristy Behrens, Steve Williams, Chris Babb)

New User Information

All first time callers receive by mail, our printed 'New User Information' and 'E-Mail Conference Directory' guide, as well as a 'Quick Command Guide' to help you get the most out of Aquila. The new user information covers system services such as answers to commonly asked questions, USA Today, Boardwatch Magazine, and Electronic Mail off-line readers. The 'Quick Command Guide' is a desktop lookup for using Aquila commands.


AQUILA BBS

708-820-8344

New User Information

Aquila Starter Kit

Callers that are new to modem communications will find 'The Aquila Starter Kit' a great time-saver. Easy for the beginner and helpful for the expert! This \$39.95 kit includes the following:

Procomm (communications program)
Full documentation for all BBS commands
Off-line file browsing program

Our complete file listing on floppy disk
Off-Line E-Mail Reader
Three month basic membership

Around The World E-MAIL

Over 450 Conference Topics

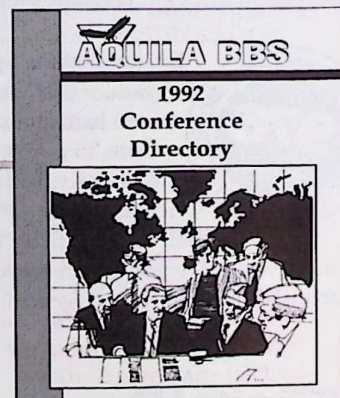


We currently echo to and from ILink, RIME, Fido-Net and Throbneth with more to come in the near future. You can get virtually any question answered here and join in on lively discussions with people from across the country and around the world. We also publish our own 'E-Mail Directory' that is sent to all users of Aquila BBS. This directory lists all of our conferences by category and gives a brief description of the topic of each one. Here is a small sampling of over 450 interesting topics that we offer:

General Discussion
Computer Related

Vendor Support
Programming Languages

For-Sale
Current Events



Call Today ! - Modem - (708) 820-8344 - Voice - (708) 820-0480

User's Forum (NIUF), together with the Corporation for Open Systems proposed a special event to publicly demonstrate National ISDN 1. The concept was that this would motivate vendors to fully implement National ISDN 1 by the time of the event. And so the Transcontinental ISDN Project 1992 (TRIP '92) was born.

During Trip '92, over 70 vendors and organizations demonstrated ISDN applications at open houses held at over 150 sites in 26 states across the U.S., four Canadian provinces and parts of Europe, Asia, and Australia. An ISDN exposition was held at Reston Virginia show casing ISDN products and services. The **Golden Splice** event was held **November 16** to demonstrate inauguration of transcontinental ISDN service. The first calls were made from TRIP '92 headquarters in Reston Virginia to sites in Chicago, Huntsville, and Pasadena.

The **Corporation for Open Systems** has produced an ISDN source book providing technical overviews of each open house application demonstrated during TRIP '92. This information will be made available online by the Corporation for Open Systems - they can be reached at **800-759-2674**.

Hayes has been a proponent of ISDN for some time and during TRIP '92 they provided the world's first Online Open House ISDN Bulletin Board System from their world headquarters in Norcross, Georgia. ISDN access to the **Online With Hayes BBS** is available at **(404)729-6525** and one area of the BBS is devoted to information about ISDN. They also operated sites in San Francisco and at their COMDEX booth. The company has developed two ISDN products of interest, the **Hayes ISDN System Adapter** and the **Hayes ISDN PC Adapter**. On October 28, they announced a 25% price reduction on both products to a list price of **\$1199**.

The **Hayes ISDN System Adapter** is an external device with voice and data capabilities supporting the

Hayes AT command set for ISDN and comes with software for both Macintosh and DOS computers. The Hayes ISDN PC Adapter in an internal circuit card for installation in PC compatible computers. The current adapters work with either AT&T or Northern Telecom ISDN switches. An upgrade to the Hayes adapters to National 1 ISDN will be available in March 1993 at a price of **\$75**. Notably, both devices feature standard RJ-11 modular connectors allowing you to connect any existing analog telephone device, including modems, voice phones, and fax machines, to the ISDN network via the adapter.

Despite TRIP '92, implementation has been spotty. Ameritech, for example has been one of the more aggressive RBOC in implementing ISDN. Kevin Behrens operates **Aquila BBS** in Chicago at **(708)820-8344**. Aquila is a PCBoard BBS operating on 25 lines. Working with Hayes Microcomputer Products, Behrens added two ISDN lines to his system using the Hayes ISDN Adapter in November at **(708)978-2221/2222**. But while the monthly charges for the lines are modest (around **\$37**), Ameritech, for no known reason, has applied clock charges of over ten cents per minute both to the caller AND to the location called. "We'll have to figure out some way to charge callers clocked rates on the ISDN lines - and that doesn't fit very well with our normal way of doing business - or theirs," said Behrens. He indicates Ameritech may be considering some changes in this area.

For ISDN to be real, it must be universally available. And with what we're seeing from most of the RBOC's regarding such pricing moves, despite TRIP '92, the future story on ISDN is shaping up to be "How the Telephone Companies killed ISDN".

For more information on Hayes products for ISDN, contact Hayes Microcomputer Products, Inc., Hayes ISDN Technologies, 501 Second Street, Suite 300, San Francisco, CA 94107; **(415)974-5544** voice; **(415)543-5810** fax.

SOFTWARE ETC. OFFERS CHOICE OF 14,400 BPS FAX MODEM OR CD-ROM DRIVE - \$199.99

by Gary Funk

Software Etc. has developed a following with a chain of over 250 stores nationwide, located primarily in shopping center/mall locations. The stores carry a very up-to-date selection of computer books, magazines, and software at handsomely discounted prices. And the mall location has proven key. Finally, the computer enthusiast in the family has something to do at the mall while the spouse or spousette, as the case may be, does the mall crawl.

But Software Etc. in the past has tended to specialize in....well... software. We were surprised to learn of some pretty serious adventures into the land of computer hardware - particularly peripherals. While we're accustomed to seeing the odd mouse pad and power outlet in these stores, some recent products have caught our eye.

Leading the pack is high-speed modems. The move to higher modem speeds has not been delayed by lack of desire, but rather by price. A thousand dollars for a high speed modem has historically been beyond the budget of callers who may not have sunk quite that much into their entire computer system and even at the **\$300-\$400** range, only the serious online aficionado is likely to spend that kind of money for a modem. A large number of callers out there are stuck at 2400 bps until a more economical modem comes along.

In November, Software Etc. began offering an internal modem from **Digicom Systems** sporting **V.32bis 14,400 bps** connections AND Group III fax at the historic price of **\$199.99**. We've long considered \$200 the magic number, and Software Etc. seems to have been the first to break it. This is not a sysop deal - anyone can walk into a Software Etc. and get one of these modems for **\$199.99** plus sales tax.

And the modem isn't at all bad. An internal circuit card, it features the 16550 UART, CCITT V.32bis 14,400 bps modulation, V.42/42bis error correction and compression as well as Microcom Networking Protocol (MNP) level 5, 9600 bps Group III send and receive fax, and a five year warranty. It comes with the **Qmodem version 4.5** terminal program and Bitfax version 2.1 to run the fax function.

This is basically the standard feature set most modems are offering in the 14.4kbps data with fax market. And in testing this modem, we achieved good results on file transfers and the fax worked without complaint.

Digicom operates a support BBS using Wildcat! v3.5. A call to the system revealed some interesting information. It seems they are offering the same modem, which retails for **\$359**, to Sysop's for **\$266**. This is also the same modem that QuickComm markets as the Spirit II internal. Digicom Systems, Inc., 188 Topaz Street Milpitas, CA 95035; (408)262-1277 voice; (408)262-1390 fax; (408)262-1412 BBS.

The other area of interest is CD-ROM drives. CD-ROMs have suffered a bit from the chicken and egg syndrome. Few titles were available because of a limited market, and with few titles, the drives have remained a bit pricey. That is due to change shortly. CD-ROM titles are currently being released in a swarm and the prices of the drives are coming down. We think 1993 will be the year of the CD-ROM.

Early in 1992, Software Etc. started carrying CD-ROMs and CD-ROM drives. This meant you could easily buy the CD-ROM drives at retail even though the prices were above the **\$500** mark. We actually purchased a Sony CD-535 drive for the Boardwatch BBS at Software Etc. The chain continues to make a mark as a price leader with a new internal CD-ROM drive for under **\$200**

The drive is the **Mitsumi CRMC** and Software Etc. is selling it for **\$199.99**. It is a 5 1/4 half-height drive and fits nicely inside most any PC. It is very well made and seems sturdy enough to stand up to most any 10 year old. It installed easily and the software setup program walks you through the setup rather quickly.

Once the unit is in place, reading a CD-ROM is as easy as pulling the drawer out, inserting the ROM, and closing the drawer. You can even play music CDs with this unit. Included on the interface card are two RCA phone jacks for left and right audio. The front panel contains a busy light, headphone jack, and headphone volume control.

A couple of drawbacks to this drive indicate its use as a personal CD-ROM rather than an online BBS unit. The drive we tested has a relatively slow access time, typically **800 ms**, a respectable data transfer rate of 150 Kbytes per second with a burst speed of 1.6 Mbytes per second. We used the drive with a 386-40 MHz PC to excellent results. But insiders tell us the drive will be upgraded to a **320 msec** unit in January at the same price. That may be a significant enough performance increase to wait a week or two.

Additionally, most CD-ROM drives feature a Small Computer Systems Interface (SCSI - pronounced "scuzzy") that allows multiple drives to be daisy chained. The Mitsumi CRMC features its own proprietary I/O card and it can only handle a single CD-ROM drive. While this may limit its usefulness for large BBS installations, as a personal CD-ROM, Software Etc.'s introduction of the Mitsumi at **\$199.99** puts this addition on par to adding a floppy disk drive to your system, and you gain access to a whole new world of large-data applications.

Both the Digicom V.32bis modem and the Mitsumi disk drive are capable products at a historic bargain price point and have the potential to change the personal computing terrain by virtue of introducing many thousands of users to high speed communications and CD-ROM applications that sim-

ply wouldn't have made the trip at the higher prices we usually associate with these devices. To find the Software Etc. store nearest you, call 1-800-328-4646 and give them your zip-code. Software Etc., 7505 Metro Blvd., Edina, MN 55439; (800)328-4646 voice.

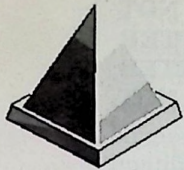
BOARDWATCH 100 READER'S CHOICE BBS CONTEST 1993

Boardwatch Magazine is sponsoring a contest to find the 100 most popular bulletin board systems in North America - and the ONE BBS most popular among callers. The contest will run from January 1, 1993 through July 1, 1993. Winners will be announced at the **Online Networking Exposition and BBS Convention** (ONE BBSCON) held at the Broadmoor Hotel in Colorado Springs Colorado, August 26-29, 1993. The Boardwatch 100 list will be published in subsequent issues of Boardwatch Magazine and distributed in electronic form world-wide.

PRIZES FOR BULLETIN BOARD OPERATORS

1ST PRIZE: The BBS system receiving the largest number of valid ballots will be named the most popular BBS. A trophy will be awarded to the top BBS at the **Online Networking Exposition and BBS Convention** (ONE BBSCON) held **August 26-29th, 1993**, at the **Broadmoor Hotel** in Colorado Springs, Colorado. Additionally, the winning BBS will receive air fare, hotel accommodations and registration at **ONE BBSCON** for the primary BBS operator as the guest of Boardwatch Magazine. Additionally, the system will be featured on the cover of Boardwatch Magazine with an accompanying feature length story about their system and a free full-page black and white advertisement in Boardwatch Magazine for a period of three months.

TOP TEN: The ten most popular bulletin boards selected by the voters will each receive an award trophy at



BOARDWATCH MAGAZINE



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TOP TEN: The ten most popular bulletin boards selected by the voters will each receive an award trophy at on their system in Boardwatch Magazine, inclusion in a special top ten BBS listing in the magazine, and a free quarter-page black and white advertisement in three successive issues. Additionally, they will be listed in the Boardwatch 100 BBS list.

TOP ONE HUNDRED: The 100 bulletin boards receiving the most votes will each be listed in the Boardwatch 100 readers choice BBS list. This list will be published in Boardwatch Magazine and freely distributed electronically on thousands of bulletin boards world-wide.

IN CASE OF TIE. Positions for which an identical number of votes are received will be determined by point value established by the date stamp assigned to each received ballot. Time/Date stamp values are accumulated for all votes and a cumulative score assigned to each BBS based on date of receipt of ballots. Votes receive a date stamp value between 1 and 180 based on the day of the contest the vote is received. System with lowest (earliest)

cumulative date stamp score will prevail in event of tie.

PRIZES FOR VOTERS

All valid ballots submitted by voters will be entered in a random sweepstakes drawing. As of the opening date of this contest, prizes include two U.S. Robotics Courier Dual Standard 16.8K Modems, two Hayes OPTIMA 14400 + FAX 144 modems, and two ZyXEL U-1496 14,400 bps modems - and more are on the way. A minimum of six valid ballots will be selected from all entries and each will receive a free modem - from the most popular modem manufacturers in the world.

RULES FOR CALLERS

Each voter can vote once, for a single bulletin board system. Each ballot must be fully completed, and individually mailed by each voter. We will verify ballots as necessary. There are three ways to vote:

1. Complete this ballot and mail to: **BOARDWATCH MAGAZINE, READERS CHOICE BBS CONTEST, 5970 South Vivian Street, Littleton, CO 80127**

2. Complete this ballot and FAX to **(303)973-3731**.

3. Or, dial the Boardwatch BBS at **(303)973-4222** and complete the online ballot provided on the main menu.

Balloting closes at 23:59:59 on June 30, 1993. Last year it ended at midnight on July 1 and caused all manner of grief and confusion so we're cutting a second off of this year's contest.

This contest is not limited to Boardwatch Magazine subscribers, and no purchase of anything is required to participate in this contest. Reasonable facsimile's of this ballot are acceptable, so long as all specified information is included.

We held this contest during 1992 and it generated 11,152 votes by the close of balloting for some 1250 different bulletin boards. The TOP system received about 450 votes. Your individual vote can have a tremendous impact on the outcome of this contest. Further, the odds of winning a modem in last years contest, were 1 in 1394. You won't get those odds in the lottery.

TITLE OF BBS YOU VOTE FOR AS THE BEST: _____

PRIMARY BBS ACCESS TELEPHONE NUMBER: _____

VOTER NAME: _____ VOICE PHONE NUMBER: _____

STREET ADDRESS: _____

CITY: _____ STATE: _____ ZIP CODE: _____ COUNTRY: _____

PRIMARY COMMUNICATIONS SOFTWARE YOU USE: _____

PRIMARY MODEM MANUFACTURER AND MODEL: _____

HIGHEST SPEED YOUR MODEM SUPPORTS: ☐ 1200bps ☐ 2400bps ☐ 9600bps ☐ 14400bps ☐ 19200bps

DO YOU USE MS WINDOWS (Y/N): _____ DO YOU HAVE A SECOND TELEPHONE LINE FOR USE WITH YOUR MODEM (Y/N): _____

TOTAL CALLS YOU MAKE TO BBS PER MONTH: _____ WHEN DID YOU MAKE YOUR FIRST BBS CALL (MM/YY): _____

AGE: _____ SEX (M/F): _____ PROFESSION: _____

SIGNATURE: _____ DATE: _____

the ONE BBSCON, a feature story on their system in Boardwatch Magazine, inclusion in a special top ten BBS listing in the magazine, and a free quarter-page black and white advertisement in three successive issues. Additionally, they will be listed in the **Boardwatch 100 BBS list**.

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RULES FOR BBS OPERATORS

While the obvious winners in such a contest are the BBSs voted the most popular, The Boardwatch 100 Reader's Choice contest is designed for the callers. This is their chance to note what elements of a BBS are important to them, and to designate a BBS they think the world should know about. And they receive the hardware prizes.

But past contests have indicated that the winning bulletin boards do campaign a bit. Bulletin Board Operators may encourage callers to vote for their system by offering whatever inducements/encouragements they like. There is one rule to this contest

for BBS operators. **YOU MAY NOT HANDLE ANY VOTE AFTER THE CALLER HAS COMPLETED THE BALLOT. YOU MAY NOT HANDLE IT IN ANY WAY.**

BBS operators may provide callers with anything they like, including postage paid envelopes, printed matter, solicitations, Jaguar convertibles, etc. But once they have completed a ballot, if they touch, handle, or otherwise deal with the ballot in any way, their BBS will be disqualified from the contest without appeal or recourse.

This is because we have developed adequate mechanisms to determine the validity of votes received - and they have proven effective. But if we allow BBSs to collect ballots, we have no mechanism for determining ballots that "got lost" and were never passed on to Boardwatch Magazine.

This contest is open to all bulletin boards worldwide with the sole exception of the Boardwatch Magazine BBS - which is ineligible. Commercial services such as Prodigy, America Online, CompuServe, are considered to be networks and not bulletin boards for the purposes of this contest. **HOWEVER**, individual forums, roundtables, or special interest areas moderated by a specific human SYSOP on those services and allowing callers to post messages in that specific area **ARE** considered to be bulletin boards for the purposes of this contest and may participate.

FREQUENTLY ASKED QUESTIONS FROM LAST YEAR'S CONTEST

Q. Can I vote for my own BBS.

A. Yes. If you don't think your BBS is the best in North America, it's unlikely anyone else will. You may vote for your own BBS, and encourage others to do likewise.

Q. Can I vote more than once?

A. No.

Q. Can I change my vote?

A. No. Once a vote is received, it is added to a database and tallied. There is no mechanism for altering votes. If we receive more than one vote from a single person, BOTH votes are disqualified and removed without notification. If more than one vote is received from the same address, we may contact the voters to ensure both votes are from different callers.

Q. Can I post an electronic survey form on my BBS and allow my callers to vote electronically online?

A. No. Electronic balloting is provided only on the Boardwatch BBS, primarily in response to past requests from vision impaired/disabled callers. BBS operators participating in the contest may not handle the ballot in any way, electronically or otherwise, after it is completed by the caller.

Q. Can I collect votes from my callers and mail them in for them.

A. No.

Q. Can I collect votes from my callers and fax them in for them?

A. No.

Q. Can I print up special ballots, and mail them to my callers with postage prepaid envelopes?

A. Yes. The ballot must include ALL information and questions from the ballot printed in Boardwatch Magazine and the ballot provided to callers must not be pre-completed. It must be a truly blank ballot allowing them to vote for whatever BBS they wish to vote for. But broadly, you can provide anything you like TO the voters.

Q. Can I obtain a list of those voting for my BBS?

A. No. Voter data is used for vote verification and statistical analysis only. We cannot provide voter lists to bulletin boards.

U.S. STREET MAP CD-ROM FOR WINDOWS

Delorme Mapping has developed a \$495 Windows-based software program titled MapExpert that works with a CD-ROM titled **Street Atlas USA**. The product allows users to zoom from a national map down through 16 zoom levels to actual street addresses in over 300 metropolitan areas. Users can search the map database by name, zip code, or telephone number.

The system allows users to annotate maps with text, new road additions, shading, or from an array of supplied map symbols. These overlay annotations can be saved to a hard disk or floppy and recalled later. A latitude/longitude display updates as the cursor is moved and the program will calculate distances between two points. MapExpert is \$495 while the Street Atlas USA CD-ROM is priced at \$169/ Delorme, Freeport Maine, (207)865-4171.

MOTOROLA INTROS WIRELESS PCMCIA MODEM

Motorola Inc. has introduced the first wireless modem in the PCMCIA card format for laptops. Dubbed the NewsCard, the modem is receive only, and can receive electronic mail and paging messages in the same format as Motorola's NewsStream pagers. The device works with SkyTel's SkyStream news and data service, Motorola's EMBARC wireless electronic mail network, Bell South's MobileComm paging service, and Southwestern Bell's Metromedia.

PCMCIA is the Personal Computer Memory Card International Association standard for credit card sized memory cards. The standard is increasingly being used for other hardware peripherals, such as modems and LAN adapters, and is shaping up as a type of tiny expansion bus for laptops. The NewsCard product is expected in 1993 at less than \$400. Motorola, Boynton Beach, Florida, (407)364-2000.

SOFTWARE

CELERITY BBS SOFTWARE VERSION 1.41 RELEASED

Lexicon Computers has announced the release of version 1.41 of Celerity BBS. Celerity is a shareware BBS package with a \$60 registration fee offering FidoNet compatibility, internal QWK offline mail support, and highly configurable menu scripting. The package can operate multiple lines using a local area network of PCs and can run existing doors programs compatible with **DOOR.SYS**, **DORINFO.DEF** and **CHAIN.TXT** formats. It also provides some limited support for NAPLPS graphics. The shareware files can be downloaded from the support BBS at (310)693-9405. Lexicon Computers, 13716 Penn St. Suite #1B, Whittier, CA 90602.

PCBOARD ANNOUNCES MULTI-PORT VERSION

Clark Development Company, Inc. (CDC) has announced release of a new multi-port version of PCBoard software supporting both intelligent and non-intelligent multi-port serial cards and allowing PCBoard operators to more easily run multiple PCBoard nodes on a single PC.

PCBoard systems offer tremendous flexibility using a model of LANned PCs with each PC serving a single telephone line. This model allows the system to drop to DOS and run virtually any other program as a DOOR. But at some line counts, the economics of running a PC for each telephone line begin to look a little grim. As a result, many PCBoard operators have experimented with running PCBoard under multitaskers such as DESQview to serve multiple lines from a single PC. But the overhead of doing so tends to limit this to about four lines in most cases.

The new PCBoard version makes the task of running multiple lines from a single PC much easier, and by

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offloading much of the communication task to intelligent serial i/o boards, allows PCBoard operators to run eight lines or more from a single 386 or 486 PC.

The new version includes a Terminate and Stay Resident (TSR) communications driver that is loaded ahead of the multi-tasking software such as DESQview. Third party programs can use this communications driver as well either by INT14h calls, or by using a linked library provided by Clark Development to recompile their programs.

According to David W. Terry, Director of Programming at CDC, "This new version of PCBoard was developed to meet the needs of our many customers who want to run more than four nodes on a single machine. In order to ensure the widest range of compatibility with current hardware and software configurations, I decided to make the new PCBoard software work with virtually any intelligent or non-intelligent serial card on the market - rather than limiting our

customers to a single board manufacturer or solution. Additionally, I designed the software to work with any combination of serial ports installed in a single machine. In other words, a customer can use a combination of both intelligent and non-intelligent boards from different manufacturers in the same machine at the same time."

The one issue that comes up with the new version is compatibility with DOORS and other PCBoard utilities used on a typical PCBoard BBS. Most of them will not work with the new version directly. DOORS such as DOORWAY, Qmail, HS/Link, and PCBFileView that already support a FOSSIL interface will work with the new version. But given the demand for a multiline version, most PCBoard operators expect other DOOR authors to release multiline versions quickly. CDC has upgraded their **PCBoard Toolkit** to include two .OBJ files which can be linked into a DOOR program to allow it to use the TSR communications driver via INT14h calls. Additionally, CDC has released

a new programming aid titled **COMM-DRV** library that will allow third party developers to access the communications driver directly. **COMM-DRV Library** is priced at \$159.

The new PCBoard multi-port software is available at an upgrade price of \$100 or to new customers at \$440 for **PCBoard/10M** (10 nodes) or \$780 for **PCBoard/100M** (100 nodes). Further, CDC is offering a series of intelligent serial i/o cards from Arnet including the **Arnet SmartPlus 4 Port Card** at \$495 and the **Arnet SmartPlus 8 Port Card** at \$995. Clark Development is currently testing the new software on their 10 line **Saltair** support BBS at (801)261-8976 for those who would like to see the new multi-port version in action. Clark Development Company, Inc., PO Box 571365, Murray, UT 84107; (800)356-1686 order line; (801)261-1686 tech support; (801)261-8987 fax.

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ESoft SHIPS QWK MAIL MODULE FOR TBBS

Sparky Herring's QWK file format for offline mail has become a significant element in the BBS world - for the odd reason that it allows callers to get back OFF line faster. Offline mail readers patterned after Herring's original QMail program allow callers to dial a BBS, download a packet containing messages from conferences they are interested in, and disconnect. They can then read and respond to the messages offline, and call back in later to upload their replies.

The QWK mail programs on the BBS end have virtually all been add-on door programs run in conjunction with BBS programs. Very few BBS software programs actually have the .QWK mail function built-in. For systems such as PCBoard, Wildcat!, and Searchlight, running a door program is a relatively simple matter. But for most true multiline systems, doors aren't an easy option and in many cases not an option at all.

eSoft, Inc. began shipments of their new **QWK Support Option** module or **QSO** for **The Bread Board System** (TBBS) on November 16. This is an integrated assembly language extension to the TBBS program that allows TBBS systems to offer full and unqualified support for offline mail. While eSoft is lagging the game a bit with an offline mail entry at this late point, a number of TBBS operators are noting it was worth the wait.

First, the QSO option module is fast. Mail doors must scan a large series of message areas and aggregate messages from those conferences the caller has selected. These messages are then packaged and compressed - usually using the .ZIP compression format developed by Phil Katz of PKWare. And this process typically takes a few minutes. Since the objective is to get on the BBS, get your mail, and get off, time IS a factor. QSO is written entirely in assembly language, and it shows.

Part of the speed is actually perceptual. QSO has three different compression modes the system operator can select. They can have QSO compress all mail, compress no mail, or just compress mail for those who DON'T logon with **V.42/42bis** or **MNP5** connections. When the mail is not compressed, it IS still packaged in a .ZIP file, but the file isn't compressed. Why? Well, the compression is the lion's share of what the caller is waiting for while they wait for the mail to pack. Virtually all new modems available today offer **CCITT V.42 error correction and V.42bis compression**. This compression in hardware is really quite similar to compression attained by programs like PKZIP. So effectively, QSO gives the mail packet to the caller almost IMMEDIATELY with NO compression, and lets the modems handle the compression on the fly. If both ends do use V.42bis, this works quite well and the total time to get a mail package is actually less. The option to compress mail for callers who don't have V.42bis and not compress mail for those who do, is pretty cunning.

We noted that files that WERE compressed in QSO tended to be about 5% larger than those done with the actual PKZIP utility - apparently a function of the limited memory space available for each caller on a multiline system. In practice, it's not noticeable.

QSO offers a couple of things beyond most mailers. Notable among these are **file attachments** and **return receipts** for e-mail. File attachments allow one caller to send another an e-mail message with an attached file containing a program or whatever. Both these functions require a bit of cooperation from the offline mail reader. Mustang Software, Inc.'s new mail manager **Qmodem Pro**, for example, supports file attachments and eSoft has used the same technique in QSO making the two compatible. Between Qmodem Pro, Wildcat!, and TBBS, we expect this function to gain a following rather quickly and rapidly migrate to most other offline mail readers.

Further, QSO allows messages of virtually unlimited length to make the trip between caller and BBS. For many, this won't make much sense since offline mail readers typically limit message length to 100 or 150 lines. But developers of offline mail readers are growing increasingly adventurous in venturing from the original QMail model and several have already indicated a willingness to support longer messages.

One of the most surprising things about the QSO option module is that it supports message area subdirectories based on the **PCBoard message format**. Since TBBS uses a message database format internally, this is a bit surprising. The BBS can't actually display PCBoard message directories online yet, but QSO can and so callers can participate in conferences held entirely in these hidden directories. According to developer Phil Becker, this allows TBBS operators to instantly take advantage of the existing utilities to participate in QWK mail networks such as **RIME**, **ILINK**, and others. Additionally, for offline mail it eliminates the previous limitations TBBS applied to mail, such as **63** message areas and **65,000** total messages. With QSO, TBBS systems can handle unlimited messages and conferences - up to available hard drive space.

QSO is priced at **\$99.95**. And most of the negatives about this option are more traceable to an early file format stretched beyond it's original limits than to lack of eSoft efforts. The 25-character limit on the **TO** and **FROM** field is increasingly a bottleneck for systems participating in Internet and other networking adventures. But we think QSO will not only bring offline mail to some TBBS systems that sorely needed this function, it will likely set a new standard for mail door performance that's tough to beat. eSoft, Inc., 15,200 E. Girard Avenue, Suite 3000, Aurora, CO 80014; (303)699-6565 voice; (303)699-8222 BBS.

PACKET RADIO - BBSING WITHOUT PHONE LINES

A worldwide Amateur Radio network lets you go modeming around the world and even into outer space—and you'll never get a telephone bill.

By Brian Battles, WS10

Telephone BBSing is an exciting way to meet people, exchange electronic mail and transfer software from your computer to thousands of others. Unfortunately, playing with a telephone modem can be costly if you spend much time connecting to machines outside your local telephone calling area. Commercial online services, such as CompuServe, Prodigy, GENie, Delphi, BIX and America Online, can quickly dry up your bank account with monthly or hourly charges. Private BBSs often request nominal membership fees that can add up to BBSers. You can, however, use your computer, communications software and simple add-on hardware to gain free access to a worldwide data-communications network.

You may have heard of Amateur Radio—also known as “ham radio”—but many people think of it as a sophisticated form of Citizen's Band (CB) or as an arcane pastime of wild-eyed old-timers tapping out messages around the world on Morse code keys. Those images are based on a degree of fact, but Amateur Radio is far more. And it may be a perfect hobby for you. Ham vs. CB

To debunk the myth that “ham radio is like CB,” here are a few key differences:

1) CB users operate without any form of licensing.

Hams must pass formal examinations and are licensed by the Federal Communications Commission (FCC).

2) By federal law, CB operators are restricted to four watts of power out-

put and may only communicate with other CBers up to 150 miles away.

Hams may use as much as 1500 watts and may contact other hams anywhere in the world. They even make two-way radio contacts via orbiting space satellites—built by amateurs—and talk directly to astronauts aboard US space shuttles and the Russian Mir space station. Communicating with distant hams is, in fact, a distinctive Amateur Radio pursuit—there are awards issued for confirming contacts with certain numbers of hams in all US states or foreign countries.

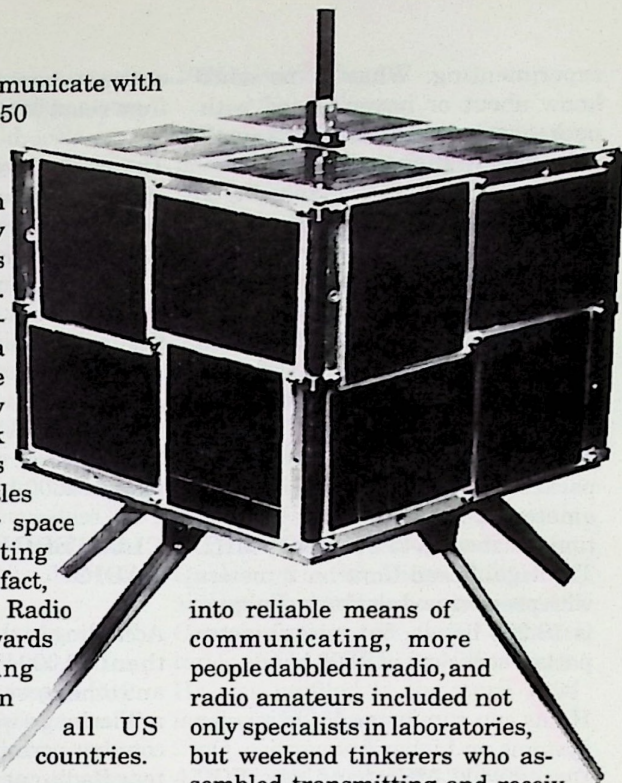
3) CB signal transmissions may only take the form of voice communications or operation of radio-controlled hobby devices (model aircraft, cars, boats and so on).

Hams are authorized to use both of those and Morse code, radio teletype (RTTY), television, fax and computerized digital data communications.

4) CB stations operate on a narrow 450-kHz-wide group of 40 channels spanning 26.96-27.41 MHz.

Hams have almost 26,000 MHz of radio spectrum assigned to them, in 25 frequency bands from 1800 kHz-300 GHz. (footnote 1)

Anyone involved with Amateur Radio has probably heard of, and perhaps tried, packet radio. It's an exciting mode whose development is far less mature in its potential than other amateur operating modes. The field of Amateur Radio operating and experimenting has been around since the turn of the century. It began with the tentative investigations into wireless communications performed by researchers like Mahlon Loomis, Guglielmo Marconi, Edwin H. Armstrong and other pioneers. As technology and equipment evolved



into reliable means of communicating, more people dabbled in radio, and radio amateurs included not only specialists in laboratories, but weekend tinkerers who assembled transmitting and receiving equipment in garages, attics and basements all over the country. The hobby of Amateur Radio caught on as a “serious” avocation for thousands of enthusiasts. As amateurs discovered more effective ways to communicate, their techniques were adopted by commercial interests. Early professional wireless operators dubbed the amateurs “hams,” referring to what were viewed as random, unconventional and largely disorganized experiments and attempts to contact each other just for fun. As ham radio activity grew, the authorities took note and got involved. Laws were passed, rules drawn up and regulation entered the picture. Amateur Radio has been formally recognized and overseen by the US government since 1912.

Packet radio was first authorized in Canada in 1979, and the first Amateur Radio experiments with packet in 1980. Amateur packet radio has come a long way in just a little more than a decade. Packet users enjoy personal mailbox systems (PMSs) or check into local packet bulletin board systems (PBBSs) for electronic mail and bulletins, or real-time information on overseas hams who are spotted on the air seeking voice or Morse code contacts. There's a whole world out there for anyone interested in

experimenting. What hams don't know about or haven't tried with packet is as exciting as what's available now. High-Speed Networks

FCC rules specify the maximum permissible bandwidth for radio signals. The way equipment sends data makes the speed directly proportional to bandwidth. Because of the bandwidth required to modulate a faster packet signal, higher-baud-rate transmissions must be conducted on higher frequencies. Most packet operating in the US is on the amateur 2-meter band, in the portion at about 145.95-145.09 MHz. The legal speed limit on 2 meters with present modulation techniques is 19,200 bauds, but most 2-meter packet still runs at 1200 bauds.

Hams can run faster data-transfer systems on higher frequencies. On the 420-450 MHz band, the FCC permits speeds up to 56 kbauds, and "backbone" message forwarding commonly moves at 9600 bits/sec or faster. Stations linked on frequencies from 1.2 GHz to 10 GHz and up to the microwave bands aren't limited in speed, successfully communicate at 56 kbit/sec and faster! At the higher speeds, it's reasonable to build networks that allow passing along large files. These include executable computer programs, detailed color graphics and even digitized voice and music data. (The FCC prohibits hams from playing music on the air, but you can send digital code from a compact disc or MIDI data to someone else who can receive it for decoding and playback off the air.)

The possibilities for high-speed data transmission are staggering. Hams are working on real-time digitized voice communications, still-frame (and even moving) graphics, and live multiplayer games. Imagine an emergency operations command post with a dozen operators typing messages on a group of keyboards, with high-speed packet carrying several hundred messages per hour. Keyboarders wouldn't outpace the hardware, and "mail" would arrive at the target sooner. The contents of an

entire computer diskette could move from coast to coast overnight.

These advances take time, expertise, effort and a certain amount of money. Not all hams have the necessary resources. A handful of dedicated enthusiasts, however, are working on easy-to-implement, affordable solutions that will someday appear in every modestly equipped ham shack. It sounds like a fantasy, but imagine what a 1950s-era ham, copying 40-WPM Morse code, would think of today's 9600-baud UHF networks.

CLUSTERING AROUND THE RADIO

According to the FCC, there are more than 580,000 licensed hams in the US and other governments report several million more worldwide. Almost every country permits some form of Amateur Radio operation, although not all countries have many indigenous hams. Amateurs enjoy making two-way radio contacts with stations in foreign countries. This aspect of the hobby is called "working DX." It's particularly satisfying to log a station from a location that's rarely heard on the air, especially when you achieve the contact by "beating the pileup" of dozens of other hams all trying to call the same station at once! There are awards, certificates and plaques you can earn for contacting hams outside your local area. Many of these are fulfilled by collecting a specified number of "QSL cards," custom-printed postcards hams mail to each other that verify and authenticate the details of a radio contact.

How do hams know when to try to snag a contact with a "rare" DX station? Mostly by tuning around and listening until they happen to find one. But there are ways to improve the odds. Not many years ago, making DX contacts consisted of randomly hunting around the dial, hoping to be lucky enough to stumble across a new one. When local VHF repeaters became popular in the late 1960s and early '70s, DXers would arrange to "spot" DX for each other. That is, after finding and working a rare one, the lucky ham would get on the repeater and

announce the DX station's frequency and call sign for his pals' benefit. Dedicated hams devised ways to greatly reduce the time it might otherwise take to fill their station logs with exotic call signs.

As packet became more ubiquitous, Dick Newell of Bolton, Massachusetts, wrote a program called PacketCluster. This allows a large number of stations on VHF and UHF to connect simultaneously to a central LAN-type hub. Several LANs connect to each other. The software enables anyone connected to type in a simple DX-spot announcement, and the cluster instantly repeats it to all the other stations in the network. Packet operators see the information displayed on their monitor screens and can then tune their shortwave transceivers to the frequency where the DX station is operating and have a shot at contacting it. All the interLAN links and user connections are made by radio.

MOVING THE MAIL

Today's hams can literally talk to the world with radios smaller than a shoe box and simple wire antennas. Early experimenters in "wireless," however, had a hard time devising equipment that would send out signals more than a few dozens or hundreds of miles. US amateurs on opposite coasts couldn't communicate directly. Yet, if a few stations agreed to meet on the air at particular times, they could relay a message, station to station, as far as necessary. Recognizing this technique and its potential, a group of hams banded together to meet on the air according to prearranged schedules. They were then able to relay a message from almost anywhere in the country until it arrived at the one closest to the delivery address.

This relay system formed the basis of the **American Radio Relay League (ARRL)**, which continued to refine the network system and spawned the formal ARRL National Traffic System (NTS) in the late 1940s. Today, the NTS operates in much the same way, with transcontinental, regional

and local nets meeting daily. In addition to messages that are handled using Morse code and voice, RTTY and packet radio carry a large portion of the messages introduced into the system. The ARRL has long been the nation's Amateur Radio membership organization, supporting the service hobby through government lobbying, international representation, providing direction and support to its extensive Field Organization, and acting as a resource for information of interest to Amateur Radio operators around the world.

Not only do radio amateurs provide the public service of relaying free noncommercial messages on behalf of the non ham population, they also send mail to each other in the form of personal messages and general-interest bulletins relating to Amateur Radio news, technical questions and other topics. Dozens of these messages are posted on thousands of PBBSs around the world. Packet messages can be forwarded from PBBS to PBBS or via PBBS to orbiting bulletin boards and mailboxes aboard the many Amateur Radio satellites. More Than Mail

PBBSs also offer files for hams to download. While most such file transfers are limited to plain-ASCII text files, there are free or inexpensive software programs available that make it a snap to transfer binary files, such as .EXE, .COM, .ZIP files. YAPP (Yet Another Packet Protocol) is one such application.

From the world of wired networks, newcomers with experience on Unix equipment or the Internet may recognize the TCP/IP suite of communications protocols has been adapted for amateur packet radio. TCP/IP stands for Transmission Control Protocol/Internet Protocol, and several varieties of TCP/IP software are available free. Most are based on the pioneering work done by Phil Karn (footnote 2), and a few other gifted programming wizards. A packet station running TCP/IP software can send and receive mail, upload and download files, hold "live" keyboard-to-keyboard conversations, and more,

in a functionally multitasking environment—even on a PC XT or clone. With TCP/IP, you could look at a subdirectory on a fellow ham's computer 500 miles away, select a file and begin downloading it to your hard drive; meanwhile, personal mail for you would arrive, your outgoing messages would be put on your friends' computer mailboxes, and other operators could download files from your specified "public" subdirectory. Free TCP/IP software is readily available for IBM-compatibles, Apple Macintosh, Commodore Amiga and other computers, on local and national BBSs and commercial online services. You'll Love It

If this sounds like fun, you're right! Not only can you contribute an important service to your community, you can participate in helping to build and improve the growing, developing amateur packet radio networks that crisscross North America and the rest of the world. For information about becoming a ham, contact the ARRL, Dept EAD-BW, 225 Main St, Newington, CT 06111; tel 203-666-1541, fax 203-665-7531.

The ARRL HQ BBS is open to the public and is completely free to anyone interested in Amateur Radio, with no access charges or fees. It supports five simultaneous telephone lines at 203-666-0578, connected to Practical Peripherals external modems operating at 14,400, 9600, 2400 and 1200 bauds (V.32, V.32bis, V.42, V.42bis, MNP3-5). It runs Mustang's WildCat! multiline software on a Gateway 2000 50-MHz 80486 IBM-compatible computer. The SysOp is Luck Hurder, KY1T, Deputy Manager of the ARRL Field Services Department.

At your request, the League will send you free literature about Amateur Radio, lists of volunteer instructors and clubs in your area, local license exam session schedules and more to help you get started.

Before you know it, you can be a federally licensed Amateur Radio operator and have the world at your keyboard!

FOOTNOTES

1 For reference, the radio-frequency bands are conventionally broken into the following: 1800-2000 kHz, Medium Frequency (MF); 3500-28000 kHz, High Frequency (HF); 50-225 MHz, Very High Frequency (VHF); 420-2450 MHz, Ultra-High Frequency (UHF); 3.3-24.25 GHz, Super-High Frequency (SHF); and Extremely High Frequency (EHF), 47-300 GHz. Frequencies above 1000 MHz (1 GHz) are considered microwaves.

2 Phil Karn, KA9Q, works for Qualcomm in San Diego, California, and was formerly an engineer at Bell Communications Research Laboratories (BELLCORE) in New Jersey. He was profiled in the April 1990 issue of QST Magazine.

ADDITIONAL RESOURCES

BOOKS

Your Gateway to Packet Radio, Stan Horzepa, WA1LOU, who writes monthly columns on digital Amateur Radio in two national publications, offers a thorough discussion of packet radio, including many of the latest developments. Published by the ARRL.

The ARRL Operating Manual, 4th edition. In chapter 10, Stan Horzepa, WA1LOU, addresses operating techniques and various networking systems, such as NetROM, TCP/IP, ROSE and TexNet.

AX.25 Amateur Packet Radio Link-Layer Protocol Learn the inner workings and technical specifications of packet protocol. AX.25 is adapted from the commercial X.25 networking standards and is specified for ham radio operation in the FCC rules. Published by the ARRL.

Satellite Experimenter's Handbook, Martin Davidoff, K2UBC, has prepared the ultimate reference for the satellite operator. Published by the ARRL.

Decoding Telemetry from Amateur Satellites, G. Gould Smith, WA4SXM, shows you how to receive and decode telemetry signals. Available from AMSAT, PO Box 27, Washington, DC 20044; tel 301-589-6062. \$15.

The ARRL has sponsored a series of definitive Amateur Packet radio Networking Conferences annually for more than a decade. Papers presented at these conferences have been collected and published in 10 Proceedings booklets. These exciting and scholarly anthologies cover advanced data communications technology, systems and operation. For information, contact ARRL HQ.

NEWSLETTERS

Packet Status Register, Published quarterly by the Tucson Amateur Packet Radio Corp (TAPR), PO Box 12925, Tucson, AZ 85732. \$15/year.

The AMSAT Journal, Available from AMSAT, PO Box 27, Washington, DC 20044; tel 301-589-6062. \$30/year.

OSCAR Satellite Report, Available from R. Myers Communications, PO Box 17108, Fountain Hill, AZ 85269-7108. \$56/year US, \$62/year Canada.

PBBS SOFTWARE

A variety of PBBS and mailbox software is available for most popular personal computers. An extensive list of Amateur Radio-oriented BBSs was published in the June(?) 1991 issue of Boardwatch. Here's a list of software, most of which is available on private BBSs and commercial online services:

ATARI 520ST/1040ST

Atari ST Mailbox, A WORLI-type mailbox program for the Atari 520ST and 1040ST computers. To obtain a copy of the software, contact Thor Andersen, LA2DAA, at Riddersporen 6, N-3032 Drammen, Norway.

PBBS, Mike Curtis, WD6EHR, has ported the WORLI PBBS software to the Atari 520ST and 1040ST computers. The program has most of the features of the original program and

is available by sending a blank 3.5-inch diskette and postpaid diskette mailer. Contact Mike at 7921 Wilkinson Ave, N Hollywood, CA 91605.

COMMODORE AMIGA

AmigaBBS, Randal Lilly, N3ET, wrote this PBBS software to run with the Kantronics KPC-1, KPC-2, KPC-4 and KAM TNCs. The software is available on the Amiga Amateur Radio Public Domain Disk #5, which is distributed by Kathy Wehr, WB3KRN, RD #1, Box 193, Watsonstown, PA 17777. To obtain a copy of the disk, send a blank, formatted disk, a sturdy return envelope, a label printed with your name and address and sufficient return postage.

COMMODORE C-64

C-64 Packet Talker, This unique mailbox system for the C-64 stores messages for up to 300 users and converts packet radio messages to voice. It's available from Engineering Consulting, 583 Candlewood St, Brea, CA 92621.

Packet Radio BBS, This C-64 program was written in BASIC by Verne Buland, W9ZGS. It may be downloaded from CompuServe's HamNet.

WB4APR PBBS, Bob Bruninga, WB4APR, wrote Commodore C-64 software that emulates many of the features of the WORLI PBBS. The features include message storage, limited file storage and automatic message forwarding. This BASIC program may be obtained by sending a formatted diskette and \$5 to Bob at 59 Southgate Ave, Annapolis, MD 21401.

IBM PCs AND COMPATIBLES

ARES/Data, ARES/Data is a multiple-connection, multiport data base and conference bridge designed specifically for tracking victims and emergency personnel in a disaster. It was written by Bill Moerner, WN6I, and Dave Palmer, N6KL, and may be downloaded from CompuServe's HamNet.

BB, The BB program for the IBM PC and compatibles is a multiple-connection PBBS that was written by Roy Engehausen, AA4RE. It may be downloaded from CompuServe's HamNet, or from the WA6RDH BBS at 916-678-1535. It's also available on disk from the Tucson Amateur Packet Radio Corp (TAPR), PO Box 12925, Tucson, AZ 85732.

CBBS Mailbox System, CBBS was written for the IBM PC and compatibles by Ed Picchetti, K3RLI, and Joe Lagermasini, AG3F. It may be downloaded from CompuServe's HamNet and is also available on disk from TAPR.

MPC, This multiport AMTOR and packet radio BBS for the IBM PC and compatibles was written by Lacy McCall, AC4X. It may be downloaded from CompuServe's HamNet.

MSYS, A multiuser, multiport PBBS that runs on the IBM PC and compatibles (it requires a hard disk). MSYS supports gateway, KA-Node and TCP/IP operations and was written by Mike Pechura, WA8BXN. It may be downloaded from CompuServe's HamNet.

ROServer/Packet Radio Mailbox System (PRMBS), This multiuser PBBS/packet server for the IBM PC and compatibles attempts to eliminate some of the SysOp maintenance other systems require. Written by Brian Riley, KA2BQE, and Dave Trulli, NN2Z, it may be downloaded from the RATS BBS at 201-387-8898 or CompuServe, and is available on disk from TAPR or from RATS at PO Box 93, Park Ridge, NJ 07656-0093; BBS (9600-1200 V.32) 201-387-8898 or 718-956-7133 (don't press Enter, wait for the sign-on message).

WORLI Mailbox, This is the original PBBS software rewritten in C by Hank Oredson, WORLI, and David Toth, VE3GYQ. The current version is intended for the IBM PC and compatibles and may be downloaded from CompuServe's HamNet, the WA6RDH BBS (916-678-1535), the VE3GYQ BBS (active at 519-660-1442 when a new version is out) and

the VE4UB BBS (204-785-8518), and is also available on disk from TAPR.

WA7MBL PBBS, This is the implementation by Jeff Jacobsen, WA7MBL, of the original WORLI PBBS for the IBM PC and compatibles. It's fully compatible with WORLI systems. The WA7MBL PBBS software may be downloaded from CompuServe's HamNet and is available on disk from TAPR.

Wake Digital Communications Group (WDCG) PBBS, The WDCG's PBBS runs on the IBM PC and compatibles. It supports file transfers using ASCII, XMODEM and XPACKET protocols. The system includes a fully developed message bulletin board, but doesn't support mail forwarding. The software may be downloaded from CompuServe's HamNet or may be obtained from the WDCG, c/o Randy Ray, WA5SZL, 9401 Taurus Ct, Raleigh, NC 27612.

TANDY COLOR COMPUTER

WJ5W CoCo/PBBS, Monty Haley, WJ5W, produced a partial implementation of the WORLI PBBS for the Radio Shack/Tandy Color Computer. The program is written in BASIC and may be obtained directly from Monty at Rte 1, Box 210-B, Evening Shade, AR 72532.

TANDY TRS-80 MODELS I AND II

KC8JN PBBS, This is a single-port implementation of the WORLI PBBS written in BASIC for the Radio Shack/Tandy TRS-80 Models I and II by Greg Day, KC8JN. It's available for \$5 directly from the author at 109 Meadow Rd, Wintersville, OH 43952. Packet Equipment Manufacturers

The businesses listed here manufacture TNCs and packet hardware for use with personal computers and terminals. You don't need an FCC ham radio license to legally receive packet radio transmissions. If you plan to get a license, you might want to get started monitoring packet and

other digital modes with equipment available from the following companies:

A&A Engineering, 2521 W La Palma, Suite K, Anaheim, CA 92801, tel 714-952-2114.

Advanced Electronic Applications (AEA), PO Box C2160, Lynnwood, WA 98036-0918, tel 206-775-7373.

Gracilis, 623 Palace St, Aurora, IL 60506, tel 708-897-9346.

HAL Communications Corp, PO Box 365, Urbana, IL 61801, tel 217-367-7373.

Kantronics, 1202 E 23rd St, Lawrence, KS 66046, tel 913-842-7745.

L. L. Grace Corp, 41 Acadia Dr, Voorhees, NJ 08043, tel 609-751-1018.

PacComm, 4413 N Hesperides St, Tampa, FL 33614-7618, tel 813-874-2980.

SATELLITE SOFTWARE

Software for satellite tracking, telemetry decoding and Pacsat operation is available from AMSAT, PO Box 27, Washington, DC 20044; tel 301-589-6062. Send a self-addressed, stamped envelope (SASE) and ask for their software catalog.

Pacsat Beginner's Guide, Includes the Microsat Ground Station software required to access many of the Pacsats. Available from AMSAT. \$12 US. **DISPLAY4**, A freeware program designed specifically for viewing UoSAT-OSCAR 22 and KITSAT-A images. A VGA or super VGA monitor is required. The software is available on many Amateur Radio-oriented telephone BBSs and on CompuServe's HAMNET. Check the following BBSs for availability:

Dallas Remote Imaging Group (DRIG), tel 214-394-7438
Celestial RCP/M, tel 513-427-0674
N8EMR, tel 614-895-2553

SATELLITE MODEMS

TAPR, PO Box 12925, Tucson, AZ 85732; tel 602-749-9479.

PacCOMM Inc, 4413 N Hesperides St, Tampa, FL 33614-7618; tel 813-874-2980.

SATELLITE ORBITAL ELEMENTS

Orbital elements for all active Amateur Radio satellites are published in amateur satellite newsletters (see above) and are transmitted twice weekly by W1AW at ARRL HQ (call the League for a schedule and list of frequencies).

TCP/IP SOFTWARE

There's typically a nominal fee charged to cover the cost of disks and postage, so send an SASE first to find out what's required. Some versions of TCP/IP software can be downloaded from local BBSs or from CompuServe's HamNet Library 9.

Apple Macintosh: Doug Thom, N6OYU, c/o Thetherless Access Ltd, 1405 Graywood Dr, San Jose, CA 95129-2210.

Atari ST: Mike Curtis, WD6EHR, 7921 Wilkinson Ave, N Hollywood, CA 91605-2210.

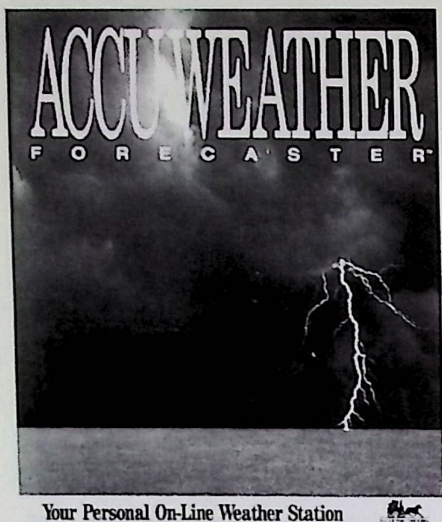
Commodore Amiga: John Heaton, G1YYH, MCC Network Unit, Oxford Rd, Manchester M13 9PL, UK.

IBM PCs and compatibles: TAPR, PO Box 12925, Tucson, AZ 85732-2925.

For a list of national IP coordinators, write to National IP Coordinator Brian Kantor, WB6CYT, at 7108 Werner St, San Diego, CA 92122.

[Brian Battles is Features Editor for QST Magazine, and a member of the American Radio Relay League-WS10. He can be reached at 225 Main St., Newington, CT 06111 or via BBS at (203) 666-0578 - Editor]

ONLINE WEATHER DATA BY MODEM



As a child growing up in an agricultural area of the Midwest, I still recall Don McNeeley giving the evening weather report on **KFVS-TV** - one of the two television channels we could get on the old black and white Admiral. Don was the weather guesser in Southeast Missouri and he sported a black magic marker and a line map of the United States. Each evening he would write temperatures all over the map one after another with that squeaky black magic marker as he told us what they were. I always wondered how he knew, and how he could remember that many numbers related to that many cities. Looking back on it, I suppose we were hurting for something to watch on television.

Today, local television stations in the most remote areas sport radar weather maps, satellite views of the nation and hemisphere, up to the minute snow and ice grids, and other graphics to show us what the weather is. Most of them imply that these graphics were generated by their "staff meteorologist." But for the most part, they download them from an online service using a modem and personal computer.

One of the largest commercial weather data providers in the country is **Accu-Weather**, located in State College Pennsylvania. Accu-Weather pays the National Weather Service a fee for access to national weather service weather data. The National Weather Service has some 1000 stations scattered across the country and receives satellite images. They issue forecasts and data in a brutally short coded form that most users wouldn't find particularly useful. The Accu-Weather staff of 70 meteorologists and some 30 artists then add value to this data through analysis, graphic generation, and other formatting and database functions. Forecasts are converted to something resembling English. Over 200 television stations then download this data for presentation to their viewers.

Accu-Weather is quite willing to make this data available to anyone with a PC and a modem. In fact, they offer a **\$39.95** software package titled **ACCU-WEATHER FORECASTER** developed by a company titled Software Toolworks that allows users to access weather data from anywhere without a great deal of effort.

The software features attractive pull-down menus and a fairly simple setup procedure. The package comes with an account number and password. The terminal package allows you to logon at 1200 or 2400 bps and browse the system - requesting various maps and reports from a menu system. While this is easy enough, some of the reports available are quite technical and there are literally thousands of them updated daily. Over 2000 different graphic presentations are updated each day for example. This allows amateur meteorologists to access a wealth of data on par with any professional.

More casual callers can look up the three letter code for the weather station nearest them in the accompanying documentation. This code is entered into the setup screen

and subsequently, you can click on **GET DATA** and the system will go fetch a preselected set of forecast and graphic data.

This includes a text forecast in plain English as well as a national weather map for current conditions, a similar map for the 24 hour forecast, and a 48 hour forecast. A "window" view shows temperature, precipitation, and barometric pressure via little thermometer graphics with a window showing what it looks like outside. This screen verges on the too cute for belief, but actually it does provide a quick snapshot of what the weather is.

The graphics are actually quite good. There are four primary levels of map graphics.

Simple Map Graphics provides fairly unattractive maps created from ASCII text characters.

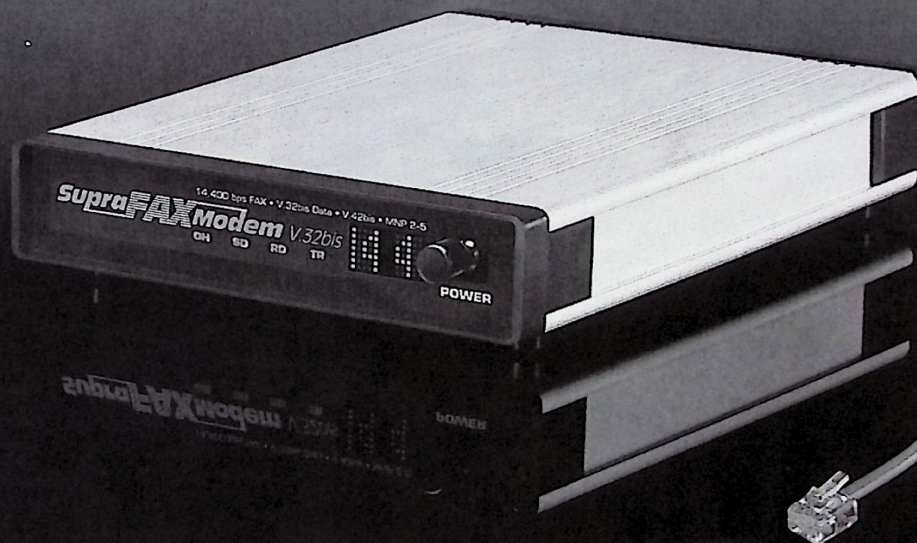
Advanced Map Plotting System or **AMPS** graphics provide much more detailed vector graphics that actually draw a map on screen and then plot data against it.

Difax graphics are actually maps and topographic depictions of weather in a format suitable for facsimile use - essentially 75 dpi black and white images, and have some limited utility on screen.

Finally, **TV Graphics** provide the color radar map, satellite image, and surface map graphics we are accustomed to viewing on television. Satellite data from the **Geostationary Orbiting Environmental Satellite (GOES)** weather satellite is available online within minutes. This was a source of some interest during the recent Hurricane Andrew assault on Florida. In addition to satellite images, Accu-Weather provides maps showing lightning strikes, snow/ice/rain activity, wind strength, etc.

Accu-Weather is somewhat proud of all this data and graphics. They offer two different levels of service pricing - one for individuals and another for commercial or institutional use. Basically, individuals can access the

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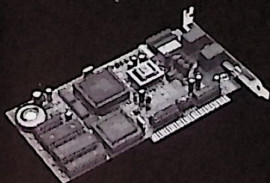


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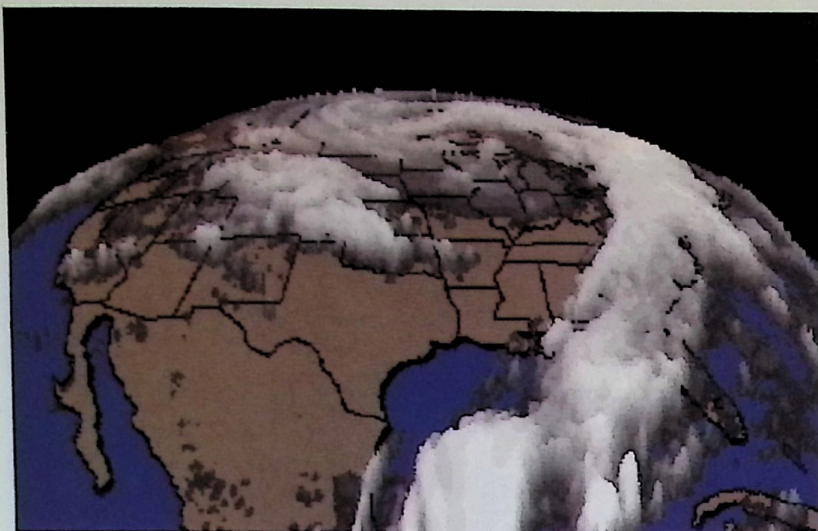
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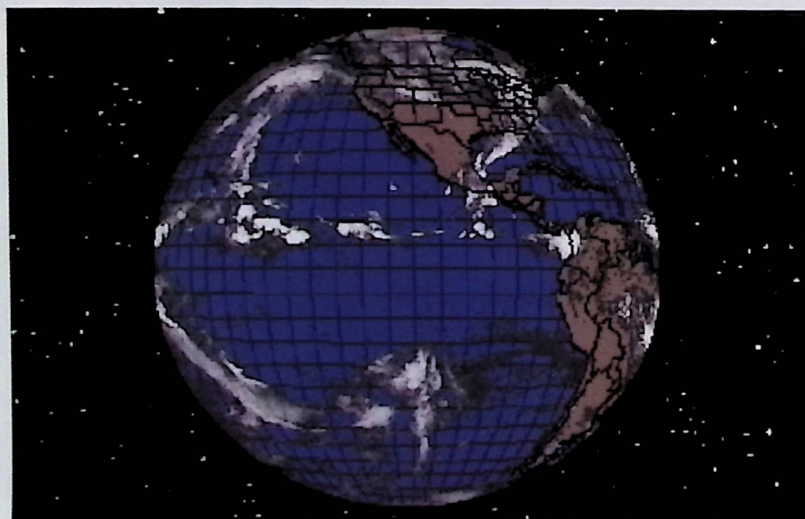




Accu-Weather graphic: SAT4D USA V 0000Z03NOV



Accu-Weather graphic: 00SFC NAS 02NOV V 22Z02NOV I



Accu-Weather graphic: SAT GOES7S V 1600Z02NOV

service for \$0.10 per minute from Midnight to 5:00 AM, \$0.19 per minute from 7:00 PM to Midnight, and \$0.39 per minute from 5:00 AM to 7:00 PM. Institutions are tagged, 10, 49, and 79 cents per minute respectively for the same periods. Individuals face a \$9.95 monthly minimum while institutions must use at least \$24.95 of use per month. A more complete database users manual is available for \$18.50 and is well worth it for serious weather watchers.

Despite the price, Accu-Weather offers an unusual value. One of the ongoing conundrums of software and online service design is the trade off between making something easy to use for casual users, and at the same time powerful enough for more serious applications. Accu-Weather has done as good a job of striking this devil's bargain between the two. Casual users can rather automatically press a key and get useful weather information in a visual and uncomplicated format. At the same time, serious amateur and professional meteorologists can spend months digging through the thousands of different data sets, graphics, and map customization options provided online. Accu-Weather, Inc., 619 West College Ave., State College, PA 16801; (814)237-0309 voice; (814)238-1339 fax; (814)237-0652 data.

For those with Internet access, there are other options. Most Universities have online services on the Internet and almost all provide some weather information. A company titled **Unidata** in Boulder Colorado provides weather data to Universities at very low cost.

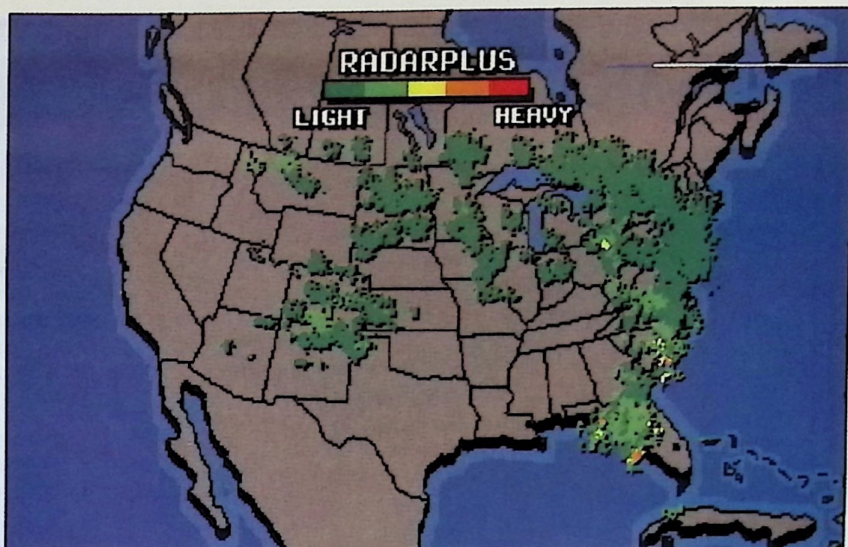
Perhaps the best implementation of this is the University of Michigan's **Weather Underground** system. This is produced by the College of Engineering, Atmospheric, Oceanic, and Space Sciences.

You may access this system by telnet by entering **telnet hermes.merit.edu**. The query **Which Host?** will appear on screen. Enter **um-weather**. The system will present a simple menu driven display listing a number of weather options. Forecast by city, for example, allows you to enter a three digit code for the city of interest, much like ACCU-

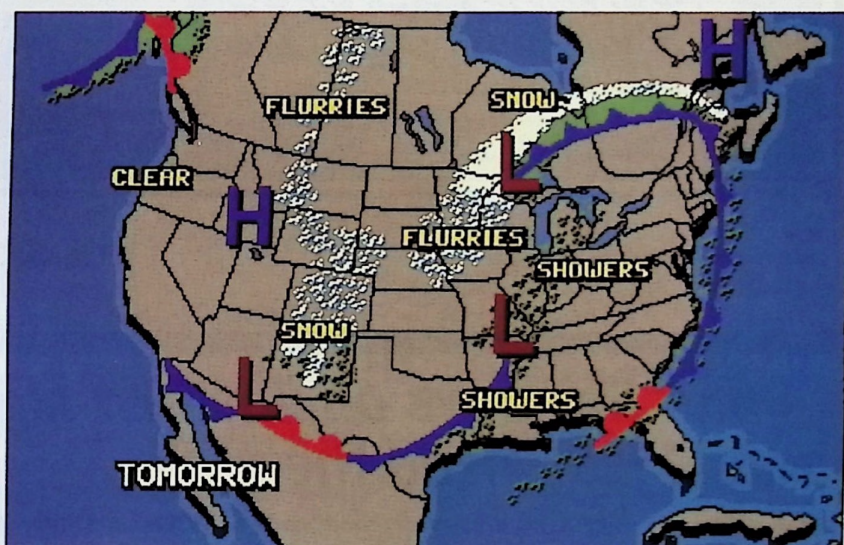
WEATHER does, and prints out an all capital letter summary of the weather forecast for that city. A database allows you to look up the three-digit codes online as well. The system provides access to a treasure trove of weather information including daily temperatures from cities around the world, ski reports, earthquake activity, marine weather reports, severe weather advisories, hurricane advisories, long-range forecasts, a national weather summary, and Canadian forecasts. While none of it has the simple to use and graphic interface of the more polished ACCU-WEATHER service, it is more weather information than you can deal with and it is quite usable. Better, it's free.

The Weather Underground system actually gets their information from Unidata in Boulder. We didn't find much in the way of public access to a similar system there, but they do have an ftp file archive open to the public that does hold some interesting information. To access this, enter **ftp unidata.ucar.edu**. At the user prompt, enter **anonymous** and at the password prompt, enter your e-mail address. Once you are on the system, change directories with a **cd/images** command. In this images directory, you will find dozens of image files in the familiar .GIF image format containing weather pictures somewhat more after the fashion of ACCU-WEATHER images. The file **WXMAP.GIF**, for example, shows a national weather radar map created that day. Other images depict various graphs and charts for different areas detailing weather activity.

The old saw that weather is something that everybody talks about, but no one does anything about, is not precisely true online. They also make pictures of it, map it, and make extensive forecasts of it available. You can now access more detailed and voluminous data on weather than Don McNeely ever imagined, or than you can possibly get in a five minute television broadcast. With a modem, some interest, and a few hours of exploration, anyone can be an amateur meteorologist.



Accu-Weather graphic: US RADAR+ 00Z 03-NOV-92



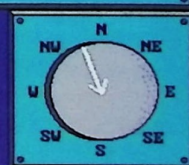
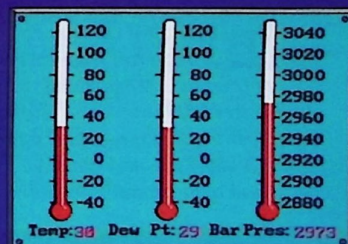
Accu-Weather graphic: 24SFC NAS 02NOV U 22203NOV I

What File Telecom Display Select Set-Up

STATION: Denver/Stpltn, Colo INFO: all
DATE: Mon Nov 2, 1992 * ARCHIVE * TIME: 4:50 PM MST



Clouds: Overcast at 1,000 ft
Precip: Light Snow
Wind: From NNW at 10 mph
Visib: 5 miles
Fog: Fog is present



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I met five guys on line last night and I just loved them all...

But one, he's really special. It almost seems like he's there to tuck me in at night. I can hardly wait to get to work in the morning to chat with him over coffee. He leaves the sweetest little messages in my mailbox. My friends all want to know where I found him. And I haven't met the guy yet.

"You're funny" he writes, and you know what? I am... I'm witty, mischievous, charming, outrageous... And I used to think I was shy.

Aline, the famous personal computer service has changed all that. Dabbling with computers was never my thing, but here I am typing away, zipping messages off to five guys at once, and having the time of my life.

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INTERNET

POINT-TO-POINT PROTOCOL CONSORTIUM

The PPP Consortium, an independent organization of manufacturers that use and support the **Point-to-Point Protocol (PPP)**, has announced the adoption of a charter and election of a steering committee at the organizations's second testing period. PPP is the multiprotocol successor to **SLIP** (Serial Line Internet Protocol) and enables connections via synchronous and dialup asynchronous modem connections.

Much of the drive behind the growth in the Internet involves local area networks linking to the Internet using leased lines and routers to actually form a full time bridge between their LAN and the network using the Internet Protocol. SLIP and now PPP allow smaller firms to make the connection by dialup modem on an as needed basis while still providing an IP connection supporting such utilities as ftp and telnet. For LANs that only need to connect to the Internet periodically to get a file, exchange mail, or logon to a service for a specific search, PPP using the public switched telephone network is much less expensive than a full time link. But to date, different vendors have implemented PPP in slightly different ways. The PPP Consortium should advance the cause of getting them all to work together productively.

PPP, defined in **RFC-1331**, **RFC-1332** and **RFC-1333** should be a more robust, full featured protocol than SLIP, and in theory, will prevent many of the setup glitches system administrators encounter when setting up a SLIP connection. This is because most of the "options" in PPP are negotiated by the protocol itself.

The second PPP testing period was held October 19-23 at a Telebit Corporation site. The original nine vendors were joined by 21 others for this second meeting bringing the stan-

dardization and testing group to a total of 30 vendors. The group includes such networking luminaries as Novell Inc., Wellfleet Communications, Rockwell International, 3Com Corp., DEC, Hewlett Packard, IBM, and Cisco Systems Inc.

"As networks become more complex, interoperability between products becomes more important to customers. The key objective of the PPP Consortium is to enhance interoperability between vendor products. Through systematic testing, manufacturers learn how to improve their PPP implementation," said Mark S. Lewis, chairperson for the PPP Consortium.

PPP Consortium testing information will be provided to the Internet Engineering Task Force PPP Extensions Working Group. PPP Consortium c/o Telebit Corporation, 1315 Chesapeake Terrace, Sunnyvale, CA 94089; (408)745-3068 voice; (408)745-3802 fax.

HOLONET

The biggest challenge in dealing with the Internet is gaining inexpensive access to it. Originally, 32 regional networks were established by the National Science Foundation under a charter mandate to become self supporting - essentially by selling access to the network and related services. Their success has been broadly mixed. As a result, in some areas of the country, access to the Internet is easy and inexpensive. In others, the regionals have decided they have the keys to the gold and ordinary people aren't allowed. It's ironically satisfying to observe how well the regionals operating on the former model are prospering while those with the latter are struggling.

Meanwhile, a relatively new type of service has emerged - small entrepreneurial systems that operate much like a BBS in scale, but to provide Internet access. As an example, the Whole Earth Lectronic Link in Sausalito now offers accounts providing full Internet access - a mail box, file transfer protocol, telnet

logins, and some utilities. This full Internet Protocol Link is the best means to fully explore the Internet, though it does expose you to a new learning curve in dealing with the Unix command line in many cases.

This month, we look at another of these small Internet port services. A company titled Information Access Technologies in Berkeley California, headed by Arthur Britto, operates a fascinating service titled HoloNet. Holo, from the Greek Holos meaning complete or total, and the more obvious Net from network would seem to imply a total Internet service. We found it just so.

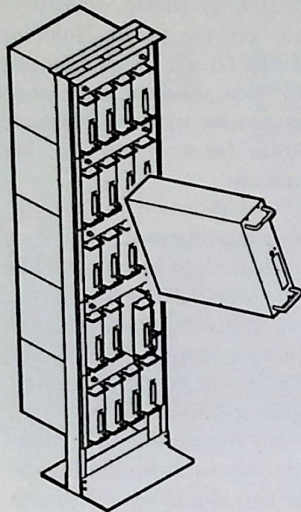
HoloNet is relatively inexpensive - if a bit complicated to calculate. The base charge appears to be **\$6** per month, but that is applied to usage fees. The basic system charges by the hour at **\$2** hourly off peak and **\$4** hourly peak (8AM-5PM Mon-Fri). This is pretty reasonable, but actually applies only to those dialing directly into the Berkeley telephone number and paying their own long distance charges. A variety of surcharged options are available using packet switching networks such as BT Tymnet to get local access from your city. These save a little over normal long distance charges, but not noticeably so.

There is another caveat on expense. The "connect" charge allows up to 1 MB of data transfer per hour. This data transfer includes transfers from other Internet sites to HoloNet, AND from HoloNet to your terminal. If you go over the 1 MB, they tack on an additional **\$1** per additional MB off peak and **\$2** per peak. A 14.4kbps modem can do a bit over 4 MB per hour, so potentially this can jack up the connect rate during prime time from **\$4** per hour to a rather stratospheric **\$14** per hour.

The system does provide you an Internet e-mail box as **user@holonet.net**. And it does provide all the normal utilities of a full IP connection including file transfer protocol, telnet logins, talk, Usenet News Groups, etc. Most of it is provided

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initially on a fairly nicely designed menu system. Instead of just facing the Unix command line, you can use this menu to perform most functions somewhat rationally. And it serves to point out some of the additional services available on the Internet such as the WHOIS database to lookup someone's e-mail address on another Internet host, or the World Wide Web or Gopher front ends used to look for things. This was actually the first time we had played with traceroute. This utility lists all connections between HoloNet and any other system on the Internet. It can be quite interesting to see the route your e-mail messages actually take to get to a particular site.

The system does provide some interesting things locally. They carry a number of publications online including NewsBytes, Boardwatch, USA Today Decisionlines, EeeekBits etc. allowing users to read current information on the covered topics. A menu

of games online looked a bit unusual for an Internet site. The user can request to NOT use the menu and use a Unix shell instead if they prefer.

Another innovation from HoloNet is a program titled HoloTerm. This terminal program is not actually released yet, but according to Britto, it will support multiple sessions - allowing you to download files in the background while reading Usenet News Groups for example.

For BBS operators, HoloNet does support UUCP BBS accounts. The initial setup fee is a modest \$50 and your system address would be **BBS.uu.holonet.net**. For an additional \$25, they will process an application for a domain name registration so that you can have a shorter and more descriptive address (**YOURBBS.COM** for example). After that, you simply pay the connect charges to access the system and pick up your mail and any newsgroups

you may choose to carry on your system. For systems taking large volumes of newsgroup mail, those normal connect rates can add up quickly. A \$125 monthly flat rate for unlimited connect is available for UUCP accounts. But HoloNet offers over 3000 Usenet News Groups that can total as much as 35 MB of data daily. According to Art Britto, a full news feed of that size would require over 5 hours daily of connect time and the long distance charges might make it prohibitive. At that point, a dedicated leased line might make sense and HoloNet can handle it. In fact, the company plans to offer full IP connections to bulletin boards.

For individual callers that simply want an Internet mail box, most commercial services and a number of bulletin boards offer them now. But if you do want to experiment with Internet functions such as Interactive Real Time Chat, File Transfer Protocol, and Telnet, HoloNet offers



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a good value. Information Access Technologies, Inc., 46 Shattuck Square, Suite 11, Berkeley, CA 94704-1152; E-mail: info@holonet.net; Modem: 510-704-1058; Voice: 510-704-0160; Fax: 510-704-8019

FTP SERVER FOR NOVELL

Novell Network users are finding it increasingly easy to connect to the Internet. The **TCPIP.NLM** Network Loadable Module allows Novell Networks to make the connection to the Internet by providing the necessary protocols to participate in this global network. But Novell networks still lack the rich variety of tools enjoyed by Unix users.

This is changing. We did run into an interesting product from MurkWorks in Potsdam New York titled **FTPD - File Transfer Protocol Daemon** for Netware 386 Version 3.11. FTPD

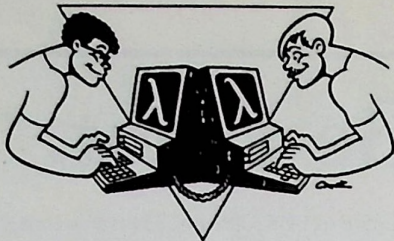
Version 1.31 is also a Network Loadable Module that allows the system to be used on the Internet as an FTP site.

FTP, or File Transfer Protocol, is defined in **RFC 959** and serves as a means to transfer files between Internet sites. A common convention that has come from this function is the anonymous ftp function - allowing anonymous users to logon to a specific system and download files from a specific and usually limited set of directories that are open to the public. FTPD allows users to ftp into a Novell site and logon to the system to transfer files. It allows use of a full logon name and password for authorized users, and also makes provisions for allowing anonymous ftp. MurkWorks, P.O. Box 631, Potsdam, NY 13676; info@murkworks.com.

ELECTRONIC FRONTIER FOUNDATION OPENS GOPHER SERVER TO THE INTERNET

The Electronic Frontier Foundation announced that they now offer access to their online document library via the Internet Gopher protocol, developed at the University of Minnesota. Gopher access joins WAIS, electronic mail service, and anonymous ftp as an electronic means of access to EFF documents.

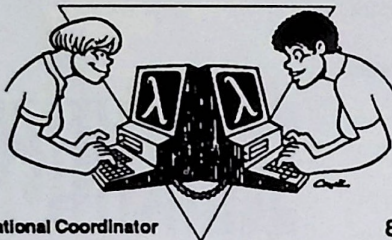
Gopher clients are available for Mac, NeXT, GNU Emacs, X11, VM/CMS, VMS, and curses interfaces. Many of these are available for anonymous ftp from boombox.micro.umn.edu in pub/gopher. Those without clients can telnet to consultant.micro.umn.edu and login as "gopher" to try it out. (EFF's Gopher server is listed under "Other Gopher and Information Servers".)



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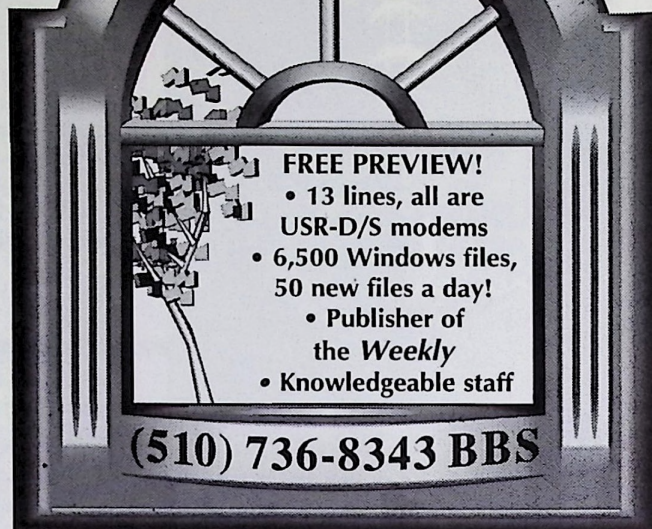
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The EFF Gopher service is available on gopher.eff.org, port 70. WAIS access is available on wais.eff.org, port 210. Anonymous ftp access to the document library is available on ftp.eff.org, in directory pub/eff. Mail service is handled through archive-server@eff.org; use "index eff" for a list of documents and document sections.

Mike Godwin, a staff counsel for EFF, took exception to our characterization of the EFF in the letters section of our November issue. He notes that he is always available for consultation by telephone at no charge for BBS operators with legal questions. For more information on the EFF or online access to documents, send electronic or postal mail to EFF, 155 Second Street, Cambridge MA 02141; voice: eff@eff.org

MFS DATANET ANNOUNCES FIRST NATIONAL SERVICE FOR HIGH-SPEED INTERCONNECTION OF LANs AND CUSTOM NETWORKS

OAKBROOK TERRACE, IL, October 5, 1992 — MFS Datanet, Inc., an operating subsidiary of **MFS Communications Company, Inc.** (MFSCC) has announced the first commercially available nationwide network designed specifically to allow companies to interconnect geographically dispersed **Local Area Networks** (LANs) at native LAN speeds.

MFS Datanet said that its new national **High-speed LAN Interconnect** (HLI) service supports Ethernet, Token Ring, FDDI, and custom networks via a nationwide fiber optic based network. To be available in the 14 metropolitan areas now serviced by MFSCC's local access services, the

first national service offering will interconnect Washington, D.C., New York City, and Chicago, and is scheduled to be operational in December 1992. Other national LAN interconnection networks are anticipated to follow over the next five months.

"An important but complex part of internetworking has overnight become a relatively routine matter with the introduction of the first national data superhighway," said Royce Holland, president of MFSCC. "This development means companies, government agencies and institutions will for the first time be able to connect their LAN networks and communicate at high speeds up to 100 megabits per second (Mbs) with other LANs. This can occur not only within metropolitan areas, but across the nation with ease and with complete confidence in the system's overall reliability and security."

Holland further noted that this national service offering is a dramatic addition to MFSCC's metropolitan

LAN interconnection services introduced in August 1991.

"Until now, communications and MIS professionals had to tailor their local and long-distance LAN interconnect requirements to transmission rates designed primarily for voice services," said Al Fenn, president of MFS Datanet. "This usually meant choosing between either too much or too little transport capacity."

"Also, building and operating networks required negotiations with multiple carriers and equipment vendors," said Fenn. "Users were offered little or no flexibility in achieving rapid upgrades to accommodate high-bandwidth applications such as distributed computing, exchanging image files, or large file transfers."

Fenn said MFS Datanet's nationwide HLI services "relieve users of daily concern with complex, trouble-prone interfaces and systems integration so they can concentrate on supporting their companies' strategic objectives."

Accessing MFS Datanet's HLI services can be as simple as plugging into a LAN walljack connected to MFSCC's fully secured point of presence in the customer's building. Transport is over a fiber-based network that is monitored around the clock.

In addition to native LAN rates of 4, 10, 16, and 100 Mbs, MFS Datanet also offers fractional data rates for customers requiring less bandwidth. "Fractional-rate customers get the same benefits of MFS Datanet's end-to-end network management and maintenance services, plus the ability to upgrade to higher capacities with the ease of a telephone call," Fenn said. "Since the MFS Datanet network protocol is independent of the customer's network protocol, the customer is free to migrate from Ethernet to Token Ring to FDDI as requirements dictate."

"A nationwide LAN offering is a natural evolution in MFSCC's position as the leading supplier of total solutions for business communications," said Holland. "Coupled with the Septem-

ber 17, 1992 decision by the FCC mandating interconnection between local exchange carrier and competitive access provider networks, it means that customers on or off our network, big or small, can take advantage of our services. More than ever before we can now provide telecommunications services that mesh with a customer's use patterns or that may not be available elsewhere."

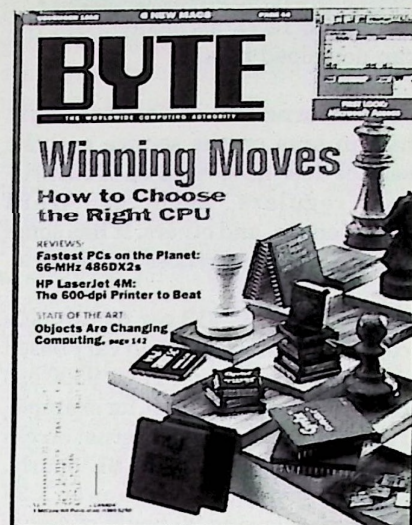
Metropolitan areas served by MFSCC networks include: Atlanta, Baltimore, Boston, Chicago, Dallas, Houston, Los Angeles, Minneapolis, New York City, Northern New Jersey, Philadelphia, Pittsburgh, San Francisco, and Washington, D.C. MFSCC subsidiaries include MFS, Inc., the nation's largest Competitive Access Provider; MFS Network Technologies, Inc., a major communications systems integrator and facility manager; and MFS Datanet, Inc., which develops and markets advanced data communications services.

BIX ON INTERNET

The **BYTE Information Exchange** (BIX) has been on a bit of an odyssey over the past year or two. This unusual information service started life very much a part of **BYTE Magazine**, one of the earliest computer publications and still a favorite among the technical end of the PC world.

BIX continues a tie to **BYTE** and provides listings and programs from each issue, available for download. But the service was actually sold to General Videotex Corporation last year. General Videotex operates the DELPHI service as well.

Within the past month or so, BIX has joined the ranks of online services experimenting with Internet access. At this point, you can actually telnet into BIX via the Internet, sign up for the service, and play. To access BIX, enter **telnet x25.bix.com**. You will see a **Username:** prompt. This is a little misleading. At this point you should enter **BIX** as the username. A short screen blurb announcing the



service will scroll up and you will get a **SECOND Username:** prompt. If you don't already have an account on the service, enter **NEW** at this prompt. Otherwise, enter your username and password.

The system performs well via telnet. The BIX host is actually a Unix machine running the CoSy Conferencing System. BIX sports conferences, file areas, and a few online text products such as Newsbytes. The conferences and file areas tend toward the technical - we found some good information on Unix utilities, DOS assembly language programming, and a lot of oddities you don't encounter much on most bulletin boards. Of course, they still sport the file listings from **BYTE** magazine. We found the **AGREP** utility discussed in the November issue without much difficulty. This is a fascinating new utility that does "fuzzy" text searches across files on a disk drive where a specified amount of error is allowed in finding matches. If you can't remember the exact spelling of some Croatian Pygmy Shoemaker and need to follow up on a last order, if you can get part of the name spelled right, **AGREP** can find it for you.

We found we were able to download files via telnet to our PC - but it was a little heartbreaking. **ZMODEM** didn't work at all. Likewise **XMODEM** didn't do very well. The **KERMIT**

the command interface, once you learn it, is extremely efficient. Novice callers and those enamored of pretty interfaces are not likely to find this service as charming as ADA programmers, but it is nonetheless interesting.

They are clearly going through some growing pains. While telnet access is already up, you can't actually address electronic mail to a user on the service from another Internet site, nor can callers to the service send mail out. We understand this is an operating system upgrade problem destined to cure itself shortly. For more information, contact BIX, c/o General Videotex Corp., 1030 Massachusetts Ave., 4th Floor, Cambridge, MA 02138; **(800)695-4775** voice; **(617)491-6642** fax; **(617)491-5410** data.

BIX provides a relatively cost efficient connection for a group of fairly technical callers. Programming and writing are the primary focus of most of the system. The CoSys interface is a bit plain, but you can scrap the menus with a single command and

by Bill Gram-Reefer



1993 will truly be the year CD-ROM grabs hold and squeezes tight. (Ouch!) For instance, you should be able to find the new external version of the speedy CD player that Apple offers as an internal option in its new Performa and MacIIvx Macintosh computers. The **Apple CD 300**, scheduled for December shipment, is reported to achieve average access times of **295 milliseconds**, with data transfer rates of **300 Kbps**, about twice as fast as Apple's CD 150. All of that speed will cost you **\$599 MSRP**. Apple's Sony-based player includes driver software and a speed-select switch that lets you toggle to 150-Kbps speeds if your CPU isn't on steroids (like you really prefer file transfers and QuickTime to run twice as slow).

With Apple's new foray into mail-order, warehouse and mass-channel merchandising, and its semi-official stance of aggressively pushing CD technology into the forefront as a real consumer item, there's no telling where the street price on these babies

The secret lies in fractally compressed image files just 5-10K in size. (640X400 24 bit VGA color). Batch Zmodem, multitasking provides continuous images. Not just another pretty interface, **FRACTERM** puts an end to the character based BBS and is the first true image based online catalogue.

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will end up. We could possibly see pricing for 150-Kbps CD players drop so fast it will make the freefall in modem prices look tame in comparison, let alone make Perry Solomon's head spin.

Which is a benefit for cash-strapped Mac sysops that can live with (yawn) 150 Kbps. The twice-as-fast speed of the CD 300 is also a good thing, especially for systems that charge by the downloaded bit since it potentially gives you room to double revenues out of the same finite amount of minutes in a day without raising prices.

But when you look at the potential of CD as THE (for now) cost-effective and efficient entertainment delivery system, it's not all good news for your BBS. For instance, Apple's new CD players, and via the set-up software driver, even the CD 150s, provide access to Kodak's Photo CD single-session compact discs. Multi-session (write more than once) compatibility is coming soon, and kick-butt CD-Interactive ain't far behind.

Have you seen the Interactive Network or the Phillips CD demos in your local electronics superstore? These offer real-time, you-make-the-call NFL football, or arcade quality shoot-em ups, kick-boxing and motocross video-game action, all from the privacy and comfort of your big-screen, Pro-Logic-equipped, surround-sound thumping, home entertainment system; not to mention some electronic-docent narrating an interactive stroll through the Louvre ("Oh honey, can we go back down the hall to the post-modernists?"). Interactive ADULT CDs? Bet your bippy. But, can your BBS compete with that?

The obituary for your BBS reads like this: your potential customers bought a \$500 Kodak or Phillips CD unit for their TV, not a V.32bis modem. Why? Because TV is worlds easier to understand than telecommunications. Plus, they wanted to look at the pictures from their trip to Alaska rather than stare in wonderment at your precious GUI interface while they tried to figure out how to download buck-

ets of meaningless, low-level information from your Internet gateway. And you know what? They also got an Apple CD 300 player for their Mac. There went another \$500 that could of bought a modem. Good grief, the year just started and you're \$1,000 in the hole. If you think Apple decided to sell its AppleLink files on CD-ROM because they couldn't dress-up the interface, you're history.

But you won't be alone. Nintendo's gotta be having nose bleeds over this CD and interactive stuff. The economy may improve in '93, but a few sysops might find themselves standing in the unemployment line; right behind the Super Mario Brothers.

CD UTILITY FROM FWB

Before we leave the CD topic, don't forget to stop by FWB's booth at MacWorld EXPO and pick up a copy of their new CD Utility that will speed-up CD-ROM player access significantly.

STARNINE LINKS QM & CC

Electronic mail gateway developer, StarNine Technologies, has introduced Mail*Link, which provides transparent cross-platform connectivity between Macintosh Quickmail users and cc:Mail users on PCs and the Mac. StarNine Technologies, 2550 Ninth Street, Suite 112, Berkeley, California 94710; (510) 649-4949 voice; Internet: info@starnine.com; or AppleLink: STARNINE.

DIALOG MADE EASY(ER)

An Ann Arbor, MI, developer, Personal Bibliographic Software, Inc. (PBS) offers Pro-Search (PS) for the Macintosh. PS is search-aid software designed to assist novice and professional searchers access and retrieve information from DIALOG databases. The Mac version is specially offered at \$295 (\$495 for DOS). It offers an intuitive interface for formulating searches and other tasks that require

speed and accuracy when the \$200/hr. clock is ticking. Much like Navigator, PS lets you prepare a search session offline, get-on/get-off, and massage the data later.

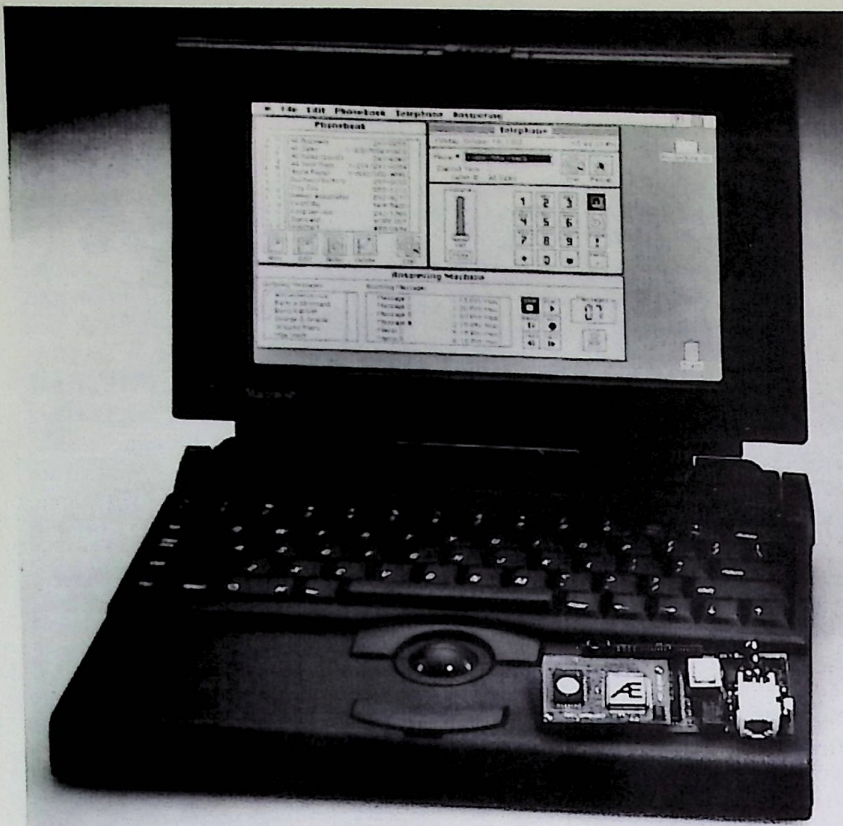
Bluesheets that display accessible databases and their contents can be searched offline. Fully configurable, PS includes terminal emulation and a scripting language that lets you automate your connection to DIALOG, Knowledge Index (KI), and to other online services, supporting 300-, 1,200-, and 2,400-bps speeds. You can select retrieval formats from a pop-up list of format descriptions. PS lets you display key words in contents (KWIC), or retrieve records with field labels (TAG) for later processing with other PBS software packages, Biblio-Link and Pro-Cite, programs that let you work with a variety of database layouts, document formats, and bibliographic styles.

A built-in accounting feature lets you accurately track DIALOG charges by search, client and charge code. Included is a module that lets you generate monthly invoices and accounting reports so information brokers (who make it sound so hard) can bill back their time-plus costs. Optional features include a Bluesheet Disk Subscription Service that keeps your Bluesheet Disk up-to-date with data for new or modified databases.

PBS offers a 30-day money-back guarantee. PS works on a Macintosh with at least one Meg RAM, using System 6.02 or later. Hard disk is recommended. 100% Hayes compatible modem required...you wouldn't want to trigger an escape sequence with some renegade standard, now, would you? Personal Bibliographic Services, Inc., P.O. Box 4250, Ann Arbor, MI 48106; (313) 996-1580 (voice).

BRAVE NEW POWERBOOKS

Apple's new Duo Docks aren't the issue. Call me nuts, but my odds-on favorite to be the I-want-one-how-much-is-it-hit of this year's MacWorld



EXPO is Applied Engineering's (AE) **AErport** family of products that promise to transform Apple's PowerBooks (PB) into truly mobile telephony command centers. Announced last August at the Boston Mac EXPO, most of the modules should be available now. The complete AErport conditioning will include: **cellular link** for wireless fax and modem capability, **V.32bis DataLink PB fax/modem** with **MNP Level-10** error correction and industry-standard compression. The fax/modem will also be hard-wired for digitizing voice (more about which later) and will include STF Technologies' **FAXstf** fax software that sports character recognition.

But wait, you've won the jackpot, there's more! You get AE's integrated software that controls the modem's digital telephone capabilities with an on-screen keypad, phonebook, and answering machine program (voice capability, remember?). Plus, a Caller ID option will enable AErport to store specific messages or instructions for individuals in the program's phone

book. The Caller ID implementation also supports dual-tone modulated frequency support, which will let you or authorized callers control the program remotely using standard touch-tone key pads, sources say.

Can this be for real, you ask? We'll see. AE has stated it will have shipped by the end of 92. The cellular part of AErport is a separate multifunction device. Because of its size, it replaces the PB's floppy drive with a PCMCIA slot that will let you access an external floppy drive, third-party add-ons (like you'd really need something else), such as a pager, digital camera, or wireless LAN adapter (guess you did). Fully configured, this "stuff of dreams" will run you over **\$3,000**, and just suck the juice right out of your ni-cad batteries. So get a solar energy battery charger and you're totally mobile!

Look for AE and its third-party partners to wow 'em with a demo in which a cellular PB is controlled via voice over a wireless connection to place calls, download files, playback mes-

sages, print files, and more.

O.K., so what's this got to do with BBSing? Plenty. You've already got the connectivity angle cold; 'cause you could place a call from either the voice, serial, cellular, or wireless LAN ports. And, there are at least two other not-too futuristic applications you might be interested in masticating on.

1.) Say you picked the \$45,000, 79-day Holland America World Cruise from behind Door #2? Just get a "follow-me-roam" cellular access account with ship-to-shore satellite access and take the Lido Deck BBS with you.

2.) Add one more element and we go off to la-la land. In a completely unrelated matter from AE's announcements, Sierra Semiconductor, a San Jose, CA-based integrated circuit (IC) boutique shop, let slip over a newswire recently that it has developed a voice-recognition IC. Implement that on an AT&T or pink chipset in the right way, and you could create some QuicKeys scripts, store them in RAM, invoke a couple of Apple Events mantras, and place a remote call from Bangkok. During that single voice call you could tell your computer to update the BBS' user file and back-up to the floptical, delete a couple of deadbeat accounts, run a virus check on the new uploads and move them to the files section, delete dated conference mail, store some voice mail for mom and dad, adjust the lawn's watering-system timer, and open the pod-bay doors please, HAL.

On the user's side of BBSing, forget GUI, forget TTY commands, because your subscribers will call and navigate your BBS by voice, leave e-mail and conference messages orally, in addition to "uploading" attached text messages and files, compressed graphics, video, and executable programs. We're talking live, oral, aural and visual multi-node chat, with AT&T picture phones.

The Duo Docks I really want to see are the ones that'll be implanted in the back of our great-grand-kids' heads—in vitro. Talk about distance

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You're right. I'm crazy. It's the sugar. Lock me up. Applied Engineering, Inc., 3210 Beltline, Dallas, TX 75234; (800) 554-6227 (voice).

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MAC BBS OF THE MONTH

Mac Line BBS carries 120 MB of compressed files, messages, and computer news including *TidBits* and *Info-Mac Digest*, all for a \$15 annual access fee. Based in Madison, WI, Mac Line's two lines are operated by John Allen. Launched in 1989, Mac Line now runs **First Class 2.0**. CD-ROM support is “on the way.”

The New Files section appeared active with a variety of contributions from many sources, while the Perot discussion, in the “**Politics and Philosophy**” conference was lively and well attended. I was amused to find that the “**World Events**” conference was home to a celebration of a recent Badger Big-Ten football victory! Fans, gotta love 'em.

Allen suggests two conferences that make Mac Line special. The “**Fantasy & Sci Fi Conference**,” features reviews and discussions of Star Trek: The Next Generation episodes. Another, “**The Mac Guru**” (by David Zavatsky—a regular Mac Line user), offers a weekly column about the Macintosh; giving hints and tips to Mac Line users. Every week, David answers questions, posts information, and recommends & picks a shareware program of the week. I find this to be

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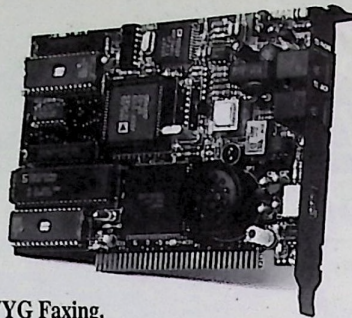
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*[Bill Gram-Reefer, based in Concord, California, is a publicist working with Comstock Communications. He operates **WORLDVIEW BBS** (510) 676-2919, running on a Macintosh computer, and moderates Planet BMUG's modem conference (510) 849-2684. Bill can also be reached on CompuServe: #70451,3304 (sorry, no snooty Internet address—dot-com this!). As the former editor of **SHOWPAGE** and associate publisher of **Western MicroMarket**, Bill has been writing about Macintosh computers since 1984.]*

LEGALLY ONLINE



SYSOPS AS TRAFFIC COPS

by Lance Rose

One of the questions sysops regularly agonize over is their degree of legal exposure and liability for messages posted on their systems by callers. Not long ago the accepted wisdom was that sysops should review their BBS message traffic regularly, and follow up on any questionable materials they might come across. This "periodic review" standard for sysop responsibility seemed to balance sysop and public needs fairly. Sysops were not terribly burdened under this scheme, as they were not obligated to investigate or search for damaging materials left undiscovered in their routine review. The public benefited, receiving reasonable protection from dangerously arranged electrons.

HIGH-VOLUME BBS'

But times have changed swiftly. For one thing, BBS' are interconnecting at an exhilarating pace. BBS networks such as FidoNet, RIME, ILINK and others continue to grow nonstop. Non-Unix BBS' are beginning to carry

Internet services, including Usenet. Gateways are opening to connect BBS networks to other e-mail networks and large commercial message services. As a result, many BBS' carry large amounts of message traffic originated at other BBS's and network sites, often acting merely as intermediate transmission points.

Many BBS' are also automating more of their internal operations. Current automated procedures include forwarding message traffic between BBS' in the network, screening files for viruses and compressing them for download, and scanning file lists for unwanted duplicates. Mail door software, which is becoming ubiquitous, collects the messages selected by each user, packs them into a compressed file, and downloads the mail packet file automatically. User interaction with BBS' is becoming automated as well, with programs that log on to the BBS, upload and download mail packets and log off, with no need for the user to be in attendance.

When these interconnected, automated systems function properly, huge volumes of message traffic are moved smoothly and automatically across the BBS networks. There is little or no human interaction with the message traffic except at the sending and receiving ends.

For such high-volume BBS', any legal responsibility requiring sysops to monitor message or file content presents a major problem. It just slows everything down, creates a burden on BBS' and networks alike, and delays communications between users. The sysops mainly devote their efforts to keeping the messages and files moving. They don't have the time or resources to screen user messages regularly for problems. That would be like asking a traffic cop at a busy intersection to peer into the window of each car passing by to see if the passengers are doing anything that would raise an eyebrow.

In addition, there is currently a great deal of uncertainty and disagreement about what level of sysop review of BBS materials would be legally suffi-

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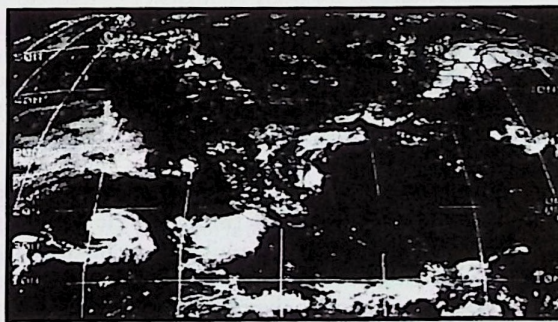
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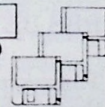
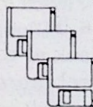
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cient. For small, relatively isolated BBS', this is only a minor problem. The sysops can educate themselves on the risks associated with various levels of review (crudely and somewhat inaccurately put, the less review, the greater the risk for the sysop), and choose the combination of message review efforts and legal risk that best suits their needs.

For high-volume BBS' and networks, the lack of a settled legal standard has a far more damaging effect. Sysops uncertain of their legal obligations can become unwilling to continue their interconnection and automation activities. The efficiency of message flow on BBS' and BBS networks can become subject to news reports about sysops being held legally responsible for user materials on their systems, as well as collective sysop paranoia. Entire networks can be destabilized based on the member sysops' differing assessments of their shared legal risks, affecting the communications activities of thousands of users. Overall, an intolerable situation.

These very effects were demonstrated recently in a disagreement among FidoNet network coordinators over transmitting encrypted private e-mail through the network. Some sysops were refusing to pass the e-mail through their systems from fear it would expose them to liability. As a result, they were sending back attempted transmissions of encrypted materials, causing inconveniences and repercussions throughout the system, and the e-mail to be delayed or undelivered. Other sysops disagreed strongly, believing they could not possibly be liable for passing messages they could not even read. A battle over network procedures ensued, based on differing sysop beliefs about their legal responsibility for encrypted messages. From what I see, this is only one of many skirmishes to come.

CAUSES OF UNCERTAINTY IN BBS REVIEW STANDARDS

There are several major reasons that the legal standard for sysop review

of BBS materials is uncertain today. One is the problem of many laws. The different branches of law implicated in BBS activities, such as copyright, libel, credit card fraud and pornography, bring with them different legal traditions. Even if we could agree that a sysop's duty under all the laws put together should never exceed a now-and-then look at BBS traffic, the proper level of sysop review efforts at any moment may depend directly on the sysop's particular legal concern at that time. This result seems especially likely when we reflect on the real world of legal mud wrestling and court brawling. Every time someone sues a sysop, his lawyer will argue that for *this* legal violation (be it copyright, invasion of privacy, or whatever), the sysop is under a much stricter standard than in other legal areas - not because it makes sense, but because it will help win the case against the sysop. This will inevitably result in different review standards for sysops in different areas of law. Further, the branch of law demanding the most stringent sysop review efforts could end up as the measure for *all* sysop review efforts. For high-volume BBS' this is a bad result, since it could mean sysops would involve themselves deeply in message traffic to avoid liability, which could seriously slow down that traffic.

Another factor creating uncertainty in legal review standards is the BBS community's quest for the proper metaphor or model for BBS'. This intrigue has been pursued for so long it has become a tradition, and all we have to show for it is a toy box full of BBS models. Every time the subject comes up, someone gleefully adds a new metaphor to the list. Last time I was part of such a discussion, we ran quickly through "printing press", "telephone switch", "book seller" and "inn", winding up in the unlikely territory of "flea market". The goal of all these metaphors is to help us understand BBS' better, for just such purposes as setting proper review standards for sysops. For example, if we say a BBS is like a supermarket, then we can look at the supermarket's duty to patrol store aisles regularly and clean up fallen merchandise, which is al-

ready well-understood under the law, and try to define the ways that a sysop should similarly "patrol the aisles" of his BBS.

The problem is that in practice we only end up more confused than ever. We waste half our time arguing about whether a sysop's responsibility for online materials is more like that of a "publisher" or an "innkeeper", and the other half cataloguing the ways in which BBS' differ from any particular model that is finally chosen. Indeed, in the FidoNet dispute described above, one of the major unresolved arguments among sysops was whether BBS' qualified for the same shield from liability accorded by law to regulated "common carriers" like telephone companies and cable TV companies.

It is becoming clear over time that BBS metaphors are nothing but a wobbly footbridge to understanding the legal status of BBS' in their own right. But until such an understanding is reached both in the BBS community and in the broader culture in which laws are made and enforced,

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we will need to continue refereeing a tug-of-war between the many BBS metaphors pulling in different directions. Such uncertainty will, again, cause sysops of high-volume systems to monitor more message activity to play it safe, with the result of impairing BBS and network traffic.

Further uncertainty arises from the likelihood that when more BBS cases finally end up in court, they will be decided largely on their own unique sets of facts, rather than broad principles of law. This would leave the case results mostly up to the subjective opinions of individual judges of what the outcome should be, or as commonly said among lawyers, the cases will be decided according to "what the judge ate for breakfast." We can only keep our fingers crossed and hope that this randomly selected set of judges enjoy their breakfasts, and seek to create a body of cases setting a consistent standard for sysop review of BBS messages.

In sum, the problem of imposing a legal duty on sysops of high-volume BBS' to monitor user messages is twofold: First, any requirement that high-volume sysops distract themselves from traffic handling to monitor message traffic creates a burden on the operation and development of their BBS' and networks; second, once a monitoring obligation is imposed, any uncertainties in that obligation can destabilize and inhibit the operation of those BBS' and networks. The growth of high-volume BBS' and networks has created an urgent demand for a more stable legal approach that does not unduly slow down message traffic. Are there any solutions in sight?

THE ECFA PROPOSAL

Here's one possible solution - a federal law that would protect sysops from all legal action for user messages or files passing through their systems, as long as they do not censor or alter them. Such a law would instantly eliminate virtually all the concerns discussed so far in this article. It would also cut down on lots of other legal hair-pulling. All those an-

noying user warning bulletins could be dispensed with. Prospective sysops who dream of new kinds of messaging-based businesses, but are holding back from fear of being sued for user antics ranging from pandering to gambling to giving unauthorized investment advice, could now plunge forward freely with all sorts of new and fascinating online services. Without much fanfare, the Electronic Frontier Foundation and some of its associates put a good deal of effort last year into working up exactly such a law. They called their proposal "**The Electronic Communications Forwarding Act of 1991**" ("ECFA"). Due to an inability at the time to gain a clear consensus on all goals within their working group, they ultimately decided not to proceed with the attempted legislation toward the end of 1991.

It is nonetheless well worth looking over the ECFA in some detail, as an example of a law that could help solve the problems of high-volume BBS' under existing legal review obligations as pointed out above. It represents no less than an attempt to do away with virtually all sysop liability in pure message-forwarding situations, high and low volume alike. And perhaps it can be revived if enough people are interested... (Background information on the ECFA comes from discussions with one of the participants, attorney David Johnson of the D.C. firm Wilmer, Cutler & Pickering)

The ECFA would have worked as follows: it was to protect all sysops who merely forward or transfer messages between users from virtually all legal or government actions based on those messages. The protected message-forwarding activity could take place anywhere - within BBS' or networks of all kinds. The ECFA concept of a "message" was very expansive. It included not only text messages, such as the ASCII e-mail and public postings so familiar in the online world, but also files, such as sound, image and animation files, computer programs, and databases.

The ECFA imposed certain conditions to assure its legal protection

would be available only where sysops forwarded messages without change. First, the sysop could not alter the "identifiability of the sender" of the message. This is a little ambiguous - if message systems are set up so that senders are not identifiable even on their own home systems (such as BBS' that accept users identified only by "handles"), then the identifiability of the sender would be effectively nil without any alteration by the sysop. Despite the ambiguity, the ECFA drafters apparently felt the identifiability condition gave some assurances that the senders of illegal messages could be tracked down and held accountable if necessary.

Second, ECFA protection would not be available to sysops for any class of messages that they screen based on message content, or even where merely assert they have the right to do so. Sysops would be protected only where they genuinely keep their hands off the messages. This condition assures that in exchange for the release of liability the ECFA proposal offers sysops, sysops will truly permit unimpeded message traffic, and advance First Amendment freedom of speech goals.

The third condition is that the sysop seeking ECFA protection could not sponsor, promote or adopt the messages in question as his own. For instance, if a BBS advertises or promotes a given person's messages, electronic column or electronic newsletter as a feature of the BBS itself, it could forfeit the ECFA's protection with regard to such materials.

There are some very nice aspects to the ECFA proposal. The most obvious is freeing sysops from responsibility for messages in any area where they follow a true hands-off policy. BBS' and networks could, if they wish, act as pure clearing houses for the messages of others, with absolutely no liability for content. This could lead to a regime of absolutely free, yet highly accessible, communications among the online citizenry. Wherever sysops want to screen or censor messages, the ECFA proposal would do no damage. Its extraordinary pro-

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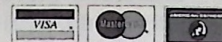
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tection simply would not apply to such situations.

This would create an ideal regime for high-volume BBS sysops. They could focus on connecting, automating and moving message traffic, without worrying about being sued for some unknown user materials flowing through the system. Developers of BBS' and networks would be free to develop the most useful and efficient communications systems possible, all for the ultimate benefit of the public using those systems. The ECFA proposal was not without its drawbacks. Possibly the biggest was its blanket protection of sysops who know that a given message or file is illegal. In fact, the ECFA would apparently have protected even sysops knowingly running criminal message systems, as long as they don't promote their BBS' as pirate, porn or malicious hacker boards, don't interfere with message traffic, and let people log on under whatever fake handles they choose.

The ECFA proposal also would have relieved regular, law-abiding sysops of all responsibility for illegal mes-

sages. Just meet the "hands-off" conditions, and you will never be held responsible for any illegal activities on your board by others. This is great when the sysop is not aware of a given illegal message. But when he hears about a seriously problematic message, such as posting illegal credit card numbers or a file that would destroy the hard disks of any users who try to run it, why should he be exempted from addressing that message in any way? After all, he may be the only one who can prevent damage or injury due to the illegal message.

Another difficulty of the ECFA proposal was its limitation of protection only to those sysops who absolutely do not touch messages. This would discourage sysops from preventing the spread of dangerous materials. For instance, a sysop may want to delete obscene or other illegal materials from further distribution, yet refrain to do so based on fear of losing his protected status under the ECFA; touch it, and you're liable... It might be better to permit sysops voluntarily to screen or remove messages honestly believed to be illegal, without

putting them under any mandatory screening obligation or making them lose protected status for the entire class of messages.

The ECFA proposal also left some important questions open:

- Would it prevent sysops from imposing any system rules at all relating to message content, unless they want to forgo protection? If so, is that the kind of choice we wish to force upon sysops?

- It offered no guidance on how a sysop could lock a troublesome user out of the BBS without losing protection. Is kicking a user off a board "declining to forward" a message? Would the strong protections provided to sysops under this proposal lead to a court-made rule, that sysops desiring ECFA protection could not deny any user access to unscreened message classes as long as they pay the standard system fees (if any)?

- Finally, did the ECFA proposal go far enough in the major areas of concern to sysops? While it addressed the sysops' concerns about personal

legal risks, it did nothing about seizure of BBS' based on suspicious user activities.

For instance, the ECFA would not have prevented Steve Jackson Games in Austin, Texas from having its BBS seized by government agents in search of illegal user messages. Technically, this seizure was not a legal penalty directed at Steve Jackson Games, and would not have invoked ECFA protection. As is well known, Steve Jackson was never even charged with a crime in connection with that seizure.

Should the ECFA drafters have faced this problem too? It would be easy enough to add appropriate language, such as: "No person forwarding or transmitting messages may have his equipment or other facilities used in the course of such transmission, or any of his other property or other property on his premises, searched or seized by government authorities merely by reason of their belief that certain messages were or will be forwarded or transmitted through such equipment or facilities, or that certain persons transmitted or will transmit messages through such equipment or facilities, where such person qualifies for the protections from liability as to such messages under this Act as provided in Sections XXXXX."

OTHER POSSIBLE SOLUTIONS

The ECFA proposal never in fact became law, so what other means of protection from legal risk are available to high-volume BBS sysops today? One possibility is continuing pursuit of First Amendment protection for freedom of speech. Under a First Amendment approach, sysops would be protected from liability wherever it would cause a "chilling effect" on BBS operations. Since even a mild obligation to monitor user materials could seriously chill high-volume BBS and network operations, as we saw above, strong recognition of First Amendment rights in BBS' could provide most or all of the legal risk protection needed for such operations to best succeed.

It is not certain, however, that industrial strength First Amendment protection will ultimately be extended to BBS', as appropriate as that may seem to those who use the networks. Even if it is ultimately recognized by the courts, we should not expect to see this established definitively for at least 10 or 20 years, unless special legislation is passed earlier. For the time being, we can gain encouragement from the First Amendment limits on sysop liability announced in the *CompuServe v. Cubby* case of last year (and discussed about a year ago in this column), and the general optimism that other courts will follow this lead.

Another possibility is to push for official "common carrier" treatment for BBS', releasing them from responsibility for message content the way that telephone companies are released today. The problem with this approach is that in exchange for offering the liability protection, the rule making authorities might impose a heavy share of regulation on BBS', including such requirements as must-carry rules and rate controls. The end result could be a regulatory burden on high-volume BBS operations far greater than the burden they sustain now due to uncertain legal monitoring obligations, entirely defeating the purpose of achieving common carrier status.

User contracts can fill in a lot of the remaining need for protection for many sysops. Combining freedom of speech protection with well-constructed user contracts, and factoring in First Amendment "freedom of assembly" protection that may well provide legal protection from having to reveal system user lists or identities to government authorities, may enable a workable balance of user anonymity with meaningful shielding of sysops from liability.

Since there is already some meaningful liability protection available for sysops, should ECFA-type federal legislation be pursued at all? We do have this dandy prototype already highly developed, and all set for further development and prompt pro-

posal to Congress. I have no doubt that the problems and questions I raised above could be ironed out fairly easily.

The ECFA model remains very attractive because unlike the common carrier approach, it's not "regulation" at all. It's purely a way of protecting BBS' and sysops from liability for unscreened user messages, without forcing them to do anything extra to obtain that protection. If they don't meet its conditions, the ECFA simply would not apply. The ECFA is an example of a "safe harbor" law. It provides protection to those who fit within its conditions, and does not alter the legal treatment of anyone else positively or negatively.

We must be careful, though, since proposing legislation can be a double-edged sword. Once a law is proposed, it is often viewed by others not involved in its original development as a vehicle for their own agendas. It could be very difficult to prevent an ECFA-type proposal from becoming riddled with opportunistic exceptions, add-ons or regulatory devices to suit some politicians' pet agendas, be they viruses, computer crime, software infringement, adult materials, or some other online-related subject. In the perverse manner of real-world legislation, a bill initiated to protect BBS' could become, instead, a law that would actually regulate BBS', and even increase sysop liability for specified "bad things". This is one result we should all do our best to prevent.

DIRECT DIAL

SMALL BUSINESS ADMINISTRATION ONLINE

Most discussions of business and the economy focus on the Fortune 500 - the 500 largest corporations in America. This is a bit myopic in that statistically they don't exist. They are easy to quantify, diagram, and diagnose because they generally file a lot of information as public disclosures to the Securities and Exchange

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And while it might seem a bit odd to go to a government agency to find out how to run a small business (what would they know about it), the agency has done a passable job acting as a clearing house for information on management, marketing, and financing. The latter being particularly important as banks like the sure hit of loaning to Fortune 500 and are wary of new ventures. As a result, **30-40%** of all loans to small businesses nationwide are obtained under loan guarantees provided by the SBA. Effectively, the SBA takes the risk off the shoulders of the bank so they can loan money a bit more freely.

In October, the SBA erected a 20-line BBS to help small business men and women find information and discover resources that may help them to start, maintain, expand or operate their businesses. **SBA ONLINE** is entirely free of charge and operates on a toll-free 800 number at **800-697-4636**.

The system was an instant hit. Up less than a week, it already enjoyed over a thousand calls daily and immediately expanded the line count to 41. The system runs on a single PC using TBBS software, and after looking it over, we must report it is one of the best menu/access designs we've seen for a new government operated BBS. Many such efforts start as "shells" with slots for information but no real information on them. They

tend to acquire an encrustation of information veneered over the top of them over a period of time. The result is rarely pretty or useful. The SBA system looks like a complete design from the start with lots of useful information up the first week.

After logon, the system displays a very plain ASCII presentation with instructions on how to turn ANSI graphics on (**H** for HELP - **5** for CHANGE USER PROFILE, **A** for ANSI and **G** for IBM graphics). This improves the system dramatically.

The system does something that most "support" type systems should always do. It provides a list of most frequently asked questions. Any type of support service online tends to receive **90%** of their inquiries on ten or twelve questions that get asked over and over and over again. Part of the magic of the BBS is that it can answer them quite consistently the same way each time and not leave the humans feeling tied up on repetitive work. The SBA system posts the 30 most frequently asked questions the SBA deals with - with answers. The answers looked a bit general to me, but the most frequently asked questions did as well.

Another thing this system employs superbly is searchable databases. The SBA is a big department with offices in all 50 states and some 600 Small Business Development Centers. A database of local office locations allows callers to enter a two-digit state abbreviation to get a list of offices in the state, street addresses, and telephone numbers. The same technique of listing by state is provided for a list of preferred lenders where you can obtain SBA financing. The SBA guarantees loans of up to **\$750,000** to small businesses and guarantees up to **85%** of that loan amount.

The SBA is as much an educational organization as anything else - sponsoring seminars and work shops on marketing, sales, promotion, and hundreds of other aspects of operating a business. They maintain a database titled **Calendar of Events** that again lists items by state. Enter

your state code and it prints out a calendar of such seminars with location, date, etc.

The system sports a message area where callers can exchange information and it is already booming. Many were consultants seeking to drum up a bit of business, but there was a fellow with a log home franchise in Arkansas, another operating a knife and tool sharpening service, and others exchanging information on business plans, resumes, how to obtain credit reports from TRW, Trans-Union, and Equifax. Some just tried out business ideas or described marketing problems they had. For a service this young, they appear to have already reached a critical mass of users.

The system also sports information files discussing dozens of SBA "programs" designed to help minority business owners, women, Vietnam Veterans, and other special categories and special loan programs. An online newsletter titled the Small Business Advocate provided some interesting news. Overall, the system was unusually friendly and welcoming in tone and presentation and appears to offer a real resource for those struggling to start or build small businesses. A voice information answer desk operates at **800-827-5722**.

SLOVENIAN BULLETIN BOARDS

Pozdravljen. When Yugoslavia disintegrated a little over a year ago it entered a stark period of fighting and unrest now to some degree the focus of the world. The country was parceled out into six new federal republics including:

Slovenia (Slovenija), capital Ljubljana

Croatia (Hrvatska), capital Zagreb

Bosnia and Herzegovina (Bosna i Hercegovina), capital Sarajevo

Monte Negro (Crna Gora), capital Podgorica (formerly Titograd)

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A Classic Service Bureau

The Business BBS will set-up, operate, and maintain your online service on our equipment, at our facility.

We custom design menus, *fax response*, databases, and other services to meet your specific business needs. We'll even handle your custom billing requirements. You control information content, service features, and user access... with complete security.

Ease of use is assured, even for customers new to online services. And, they won't get busy signals!



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Efficient, easy to use applications are built to meet your business and customer needs.

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Voice Modem Fax
(310) 477-0593 • (310) 477-0408 • (310) 477-9475
2531 Sawtelle Blvd., #109, Los Angeles, CA 90064-3163

Serbia (Srbija), capital Belgrade (Beograd)

Macedonia (Makedonija), capital Skopje

Serbia and Monte Negro now claim to be the inheritors of Yugoslavia and are effectively the last communist regime operating in Europe. They are currently waging war to try to gain Bosnia and Herzegovina and over 100,000 citizens there have died from Serbian shelling and fighting. While Sarajevo once sported several bulletin boards, one of the early casualties of Serbian shelling was a telecommunications center and less than 10% of telephone lines in this area work at all - and virtually none to the outer world.

But the surrounding areas do support a few systems. Running a bulletin board in such a climate is no easy task. Telephone line installations in Slovenia run about \$800 while in more rural settings it can run as high as \$2000 - this in a land where the average wage of top executives runs

some \$400-\$500 monthly. But Boris Horvat fervently believes in the electronic bulletin board as a voice of freedom. With Aljaz Turk and Maja Fajdiga, he founded the **ABMBBS** at **38-64-218-663** in **Ljubljana** (lew-bee-anna) using **PCBoard** software in April of 1991. The system currently operates on nine lines and provides more than **250** message areas. It operates in the International FidoNet as **2:380/102**.

Horvat graduated with a degree in Mathematics and Computer Science from the University of Ljubljana in 1980. By trade he is an Organ Restorer, he builds and restores keyboard instruments - harpsichords and church organs. But he's also developed a bit of a career as a writer. He started with lectures and writing for a music magazine, but currently he serves as editor of the Electronic Communications section of **MONITOR MAGAZINE**, the largest general purpose PC magazine in Slovenia with a circulation of some 6000 copies monthly. In a country of two million people, it's considered large.

The system features a **ZyXEL U-1496** modem at **38-61-155-136** and a **U.S. Robotics Courier Dual Standard 16.8K** at **38-61-218-663** as a result of Horvat's trip to **ONE BBSCON** in Denver this past August. Using our ZyXEL U-1496, we were surprised to obtain a solid 9600 bps connection to the ZyXEL line on ABM-BBS. We actually downloaded a **519KB** GIF image of some of the ABM-BBS users and obtained a **1043** character per second transfer rate.

A note on dialing internationally. Of course, you must preface the number with **011** - the digits for an international switch. The country code in **Slovenija** is **38** and the city code for **Ljubljana** is **61**. But there are a number of strange sounds issued by the switching circuitry between here and many European countries. Many modems, ours included, somehow decide the line is busy from the tones it detects. We actually dialed the number with a telephone connected to the same line as the modem. When ABM-BBS answered, we entered the command **ATO** from the keyboard and

Horvat provides us with a list of bulletin boards in the ex Yugoslavia area. Matjaz Potrc of MojsterR BBS in Novo mesto Slovenia actually compiles a list of bulletin boards for Slovenia.

Slovenija

ABM-BBS 2:380/102	(061)218-663	DS
.....	(061)154-270	2400
.....	(061)154-156	2400
.....	(061)154-185	2400
.....	(061)155-136	14400
.....	(061)154-073	14400
.....	(061)153-269	2400
AgroPORT	(064)723-264	
Allen Nation	(061)667-863	
Atlantis	(061)210-140	2400
ATR 2:380/108	(061)343-904	9600
Beograd 2:380/106	(061)311-024	2400
Crackhouse	(063)855-208	HST
dIRE sTRAITS 2:380/110	(061)554-137	
EDipro 2:380/109	(063)852-527	9600
GimVic 2:380/107	(061)267-940	9600
Headstone	(0602)20-767	
Infobox	(062)222-742	
Kadett	(061)271-324	
Krpan 2:380/104	(062)221-574	14400
Medium	(061)225-175	
MicroArt 2:380/100	(066)34-986	14400
Mlacom	(061)114-204	
MojsterR 2:380/101	(068)23-731	14400
Omega	(061)374-213	2400
Paranoia 2:380/114	(061)340-846	2400
Pony Express	(061)223-229	14400
Programmer's	(062)810-824	
Radio Student 2:380/111	(061)271-087	14400
R.I.S.P. 2:380/103	(061)199-400	14400
UnikUm 2:380/112	(061)728-014	
Vogon Poetry 2:380/105	(0602)42-127	14400

Hrvatska (Croatia)

3C-Coning	(041)538-120	
ABM-ZAGREB 2:381/101	(041)535-049	14400
Alt::BBS 2:381/100	(058)320-444	14400
Bug	(041)451-030	14400
Croatia	(054)127-118	9600
Figura	(041)112-372	
FireFly	(041)237-920	
Genesis	(041)752-970	
Globtour-Istra	(0531)351-846	
GT	(051)274-943	
MDS	(041)161-360	14400
MIPS	(041)251-486	9600
Oziris	(041)612-810	2400
Sih	(041)423-006	
Strategy 2	(041)416-439	
TVRI	(051)36-518	
UnderWorld	(041)411-995	

Mr. Dejan Ristanovic of Sezam BBS in Belgrade maintains the list of BBS operating in Serbia. While Serbia is under sanctions of the international community, the computer connections between Slovenia and Serbia still work occasionally.

Serbia

Durlan	(018)713-836	2400
Evrounion	(011)655-592	9600
Fenix	(011)414-312	9600
FON File Server	(011)237-2392	2400
Huter	(011)788-189	2400
Kucvevo	(012)52-109	2400
Madonna	(011)644-082	2400
Moonlight Amiga	(011)154-836	14400
Oreska	(031)28-276	2400
Pingvin	(011)606-928	2400
Politika	(011)329-148	2400
Prometheus	(024)51-792	2400
Rhinoceros	(021)350-751	2400
Rimtitutiki	(011)872-147	2400
Sezam (10 nodes)	(011)648-899	2400
Tangram	(018)21-651	2400
Velcom	(011)751-820	2400

Finally, we found one BBS operating in Macedonia

Dzunitsa SKOPJE (091)254-619 2400



hung up the phone. The modems negotiated a handshake quite easily from there.

During his trip to the U.S., Horvat also made contact with **PeaceNet** in San Francisco and joined the network through the **London GreenNet**. As a result, all ABM users, including Boris Horvat, can be reached by Internet at the address **first.last@abm.gn.apc.org**.

The system is undoubtedly the largest BBS in Slovenia. And it lists the other bulletin boards operating in Slovenia and Hrvatska in Bulletin 5. Most of the system is in Slovenia so you may incur some difficulty in reading many of the file descriptions and messages. But many callers are surprisingly fluent in English as well. Lep Pozdrav. Boris Horvat, ABM-BBS, Zihlerova 43/40, 61000 Ljubljana, Slovenia. **38-61-211-553** voice; **boris.horvat@abm.gn.apc.org**.

THIS MONTH - NEW ZEALAND

Our featured list this month is a national list of **233** bulletin boards operating in New Zealand. New Zealand is an island country of some **103,736** square miles lying to the south and east of Australia. The country sports a population of **3,434,000** people. It lies in the **GMT+12** time zone approximately **7333** miles southwest of Denver.

Auckland is the largest metropolitan area in the country with a population of some **842,000** followed by Wellington and Christchurch which each sport a bit over **300,000** people.

Our list this month is actually compiled by a gentleman in Auckland named Richard Vowles. Richard operates a Unix-like system titled **Maleus Maleficarum** (The Hammer of Witches) at **64-9-483-6959**. Note that the country code for New Zealand is **64** and the city code for Auckland is **9**. Preface this number with **011** for an international switch if dialing directly from the United States. It operates on the Internet as **nacjack.gen.nz** and Mr. Vowles can be reached by e-mail at **richard@nacjack.gen.nz**. The system is also on FidoNet as **3:772/110**. In fact, the system even operates via packet radio at **ZL1UTF@ZL1AB.#11.AKL.NZL.OC**. Vowles, who goes by the alias Hexen Hammer online, keeps the Auckland list and compiles other lists into one list for New Zealand. The main contributors seem to be Pat Caine, with the Wellington list, and Craig Shore with a list from Christchurch.

As to BBS software, New Zealand seems to have an affinity for Frank LaRosa's Searchlight BBS package. Some **43** systems run **Searchlight** BBS with **Remote Access** coming in a distant second with **21** systems. We found a number of New Zealand systems intriguing. **THE HAIRLESS BBS**, for example, is run by **BALDMAN** and is dedicated to hassling others.

To dial any number on the list from the United States, first dial **011** to get the international direct dial switch, followed by **64** for the New Zealand country code. Next, dial the area prefix (for example: Christchurch is **03**) followed by the listed telephone number for the board. Actually connections to the Pacific rim have for some reason improved fairly dramatically and we got good connections into New Zealand.

NEW ZEALAND

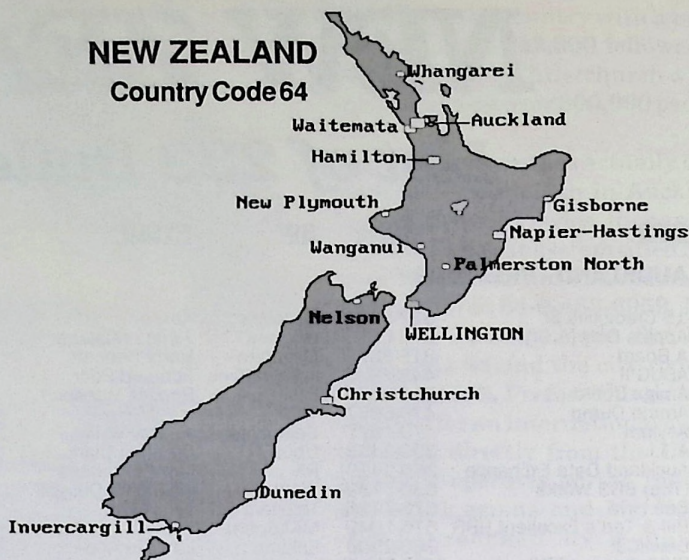
List of 233 Bulletin Boards

BBS	PHONE	SW	SYSOP	NOTES
AUCKLAND - PREFIX 09				
15 Credibility St	537-5808	Xenolink	Xaxxa	Anyone but files junkies
Apples Only [A.O.]	276-0680	Hermes	James Maguire	Supports apple users, Shareware from Apple, Mac Files
A Board	815-3579	Sapphire	Harry Bennett	Message bases, Files and Various Pyroto.
ABUG II	445-2923	Archimedes	Edouard Poor	Acorn users, general interest.
Amiga Board	818-9698	BBS-PC!	Rodger Manson	Official Amiga User Group PD Amiga files only.
Ammo Dump	479-5657	TAG	Ice 'M'F'n T	Messages, those who want to say anything they like
Asylum	479-7677	Searchlight	Jeremy Wylie	General
A.T.I.	303-2456	Opus	Stephen Clark	Opus, IBM & Amiga support
Auckland Data Exchange	360-2419	RA	Mark Stephens	Online Games, Amiga.
(The) BBS Works	630-7739	Waffle	Wayne McDougall	Files, messages, sysop who actively chats about all
Bee Hive	576-7728	Telegard	Terry Hart	IBM based, dedicated to utilities.
Bill & Ted's Excellent BBS	576-1049	MAXBoard	Bill	Door gamers
BlackCat	360-2506	Enigma	Lynn Prentice	Peruse users, friends of Lynn, MSDOS Windows.
BladeRunner BBS	410-7915	Hermes	Blademan, Joey	Mac files. Run by a 13yr old sysop.
BorderLine	276-9151	Maximus	Jaymax	Created for discussion of Gay and related issues.
Bruiser's BBS	836-4576	Telegard	Bruiser	Online games, messages, and files.
Castle Rathbone II	486-2566	TAG	Desert Hawk	IBM Only. Message oriented with files available
(The) Center	443-7679	Wildcat	Jon Meekins	IBM files, doors
Christian Ministry	636-4795	Maximus	Errol Thompson	Specialising in Christian Ministry Support
Circle Games BBS	307-0687	Spitfire	Jon McSpadden	Specializes in Play By Mail games. Circle Games
Circuit Board	537-2822	Telegard	Tony Margetts	General
CmP!	521-4215	Paragon		Amiga Files Only.
Computa Club	575-8665	Spitfire	Neville Harlick	IBM support, special files for Sanyo Users
Com-Link	263-4163	Proboard	Mamercus	
Connections	482-0124	Telegard	Ron Wilson	IBM, online games/Doors
Davey Jones's Locker	520-3657	RA	Davey Jones	All users welcome.
(The) DavTech BBS	579-9003	Hermes	David Lilienthal	Messages, Mac Files. IBM docs, GIFs, VOCs, MODs
Deep Thought	443-7636	Hermes	Nick Warburton	Support for Mac & IBM DOS/Windows, SIGs
Delta Alpha Kilo	817-5002	Telegard	The Blind Mullet	Doors, Messages.
Dimension BBS	8464-184	Telegard	Dr Who	Amiga and IBM users
Doctor Disk Auckland	373-3389	Telegard		Support for Doctor Disk Ltd and McAfee's
(The) Edge	837-1754	Spitfire	Russell Hardie	Windows & Soundblaster files. Doors, chat
Electron BBS	525-0300	Electron	Kevin Johnson	Technical discussions, electronics
Enigma	480-0951	Enigma	Rohit Gupta	Computer technical discussions and information
Explosive Suicide	278-1989	RA		Mainly messages, some files, friendly sysop [chat]
Frenzy!	410-9846	MAXBoard	Bad Attitude	everything
Fun Zone BBS	832-1680	Telegard	Fred Ziinsi	Message based
Funkys House	630-0633	Spitfire	John Migias	Non-specific
Golden Delicious	815-1285	Red Ryder	Michael Hope	Auckland Apple User Group BBS.
(The) Graveyard	267-9559	MAXBoard	Chuck!	Official MAXboard distribution site and support
Hairless BBS	298-6116	MAXBoard	Baldman	A BBS dedicated to hassling others
Hell	521-0164	Ami-Express	Freddy	Amiga File BBS ONLY
Hitch-Hiker's	817-5515	Paragon	Fred Prefect	All users are welcome, young, old, Amiga, IBM, or Mac
Hoons For Christ	537-4272	Spitfire	Dave Clements	IBM Files, Christian Echos
Houseboat Haven	372-7129	RA	Phantom Uploader	By invitation
InfoBoard	833-8788	Maximus	Colin Swabey	Free, \$50 year no file ratio 1.5 hours per day
Infomaniac!	489-6750	RA	Aaron Schiff	Computer industry news, messages, files
Jazz's Strip	478-3629	Telegard	Honey D. Clown	Files, Messages and Doors
Jupiter II	478-6926	Jupiter	Adrian Dorrington	Message oriented
Just Another Board	849-2035	Hermes	Nicholas Brooker	Macintosh Users, Gigaudio and video discussions
Kappa Crucis	817-3324	ESIX	David Dix	Message oriented, over one thousand newsgroups
(The) Kiwi BBS	818-7079	Telegard	Harry Rose	IBM Only, Files, Doorgames, Messages
Knoddy's House	266-4597	Telegard	Knoddy	Files, messages, chat w/ sysop, home brewing
Life Force	537-1586	Spitfire	Michael Chen	
Malleus Maleficarum	483-6959	MMNA	Hexen Hammer	Messages ONLY.
Matrix BBS	235-1364	Ultra	Shane Kitcher	Files, programming, art and music is a speciality
MAXBoard Central	815-2576	MAXBoard	Max Headroom	MAXBoard updates, messages
McAfee NZ BBS	486-7606	Maximus	Selwyn Arrow	PC Support, and in particular the McAfee
(The) Miser's Vault	820-2164	RA	Scrooge McDuck	Official Computer Down Under Ground Digest
Monster Land	522-1306	Telegard	Tom Ho	
Moogaboard	267-2865	Falcon	Mooga	Amiga - messages
New Board	410-9671	Herbet	Blademan	
New Era	527-6501	Paragon	New Era	Amiga ONLY, Help for Amiga problems.
Nexus II	520-3265	Paragon	Dragonlady	Adult oriented, Amiga and IBM files
NikBoard	373-4347	Custom	Nikolaos Wakem	Games, all computers supported.
Nite Owl BBS	570-2885	RA	Mark Brandwood	Atari, IBM files, Door Games, Message Bases
Niteline BBS	832-2164	Spitfire	Tony Stephens	
NutHouse BBS	836-1113	Renegade		Off-beat file/message area's
NZ Commodore UG	528-5872	BBS-PC!	Richard Doul	Amiga support, C64/128 Support, PD software
NZMC Fidonet Gateway	445-4571	Maximus	Chris Miller	Message oriented. Limited free access.
NZ Micro Maxie	444-0989	Maximus	Peter Knapper	Limited access Free. Full access \$36
Out of Sight	298-3805	Ultra	Jonathan Mosen	Dealing with people disabilities.

BBS: 233
POPULATION: 3.434 Million
AREA: 103,736 Square Miles
BBS Per Population: 1:14,738
BBS Per Area: 1:445 sq. mi.

NEW ZEALAND

Country Code 64



TOP TITLES

Searchlight	43
Remote Access	21
Spitfire	19
Telegard	16
Wildcat!	15
Maximus	15
Paragon	9
Waffle	8
Opus	6
MAXBoard	5
Hermes	5
All Other	70

BBS

Paradise BBS
 (The) Patch
 PC Computer Group
 PC Extras
 Pee Wee's Playhouse
 Phoenix!
 (The) Pinnacle Club
 Pipeline
 Portunus's Little CBCS
 Power Board
 Powerlink
 Prime Directive
 Quo Regnum
 Sound Source
 (The) Starship Enterprise
 State of Chaos
 STAtus BBS
 TC's Muzak BBS
 Tech Pacific Support
 Time Zone BBS
 TL Systems
 Toadhall BBS
 Triton BBS
 (The) Ubiquitous Conn
 (The) Village
 Whakapapa

PHONE

817-4134
 277-9807
 302-2189
 525-6023
 827-8371
 412-7860
 631-5382
 479-7623
 372-5454
 372-8103
 525-5492
 846-4734
 629-2540
 579-3356
 525-2756
 410-3815
 358-5543
 268-1624
 415-8464
 625-7980
 634-2972
 570-5171
 537-5857
 443-7108
 443-4049
 832-4457

SW

RA
 RA
 Spitfire
 Opus
 Spitfire
 Wildcat
 Waffle
 Xenolink
 Maximus
 Spitfire
 Telegard
 Spitfire
 Telegard
 Warp6
 Spitfire
 Waffle
 RA
 TAG
 Telegard
 Telegard
 Paragon
 Express
 Wildcat
 Maximus

SYSOP

Ray LeCheminant
 Orion
 Grant Hackett
 Robert Pregnall
 Steve Murray
 Tony Rielly
 Bernadette Mooney
 Michael Taylor
 Portunus
 Blake Shave
 Merlin
 Cornucopia
 The Mage
 Mod Man
 Captain Kirk
 Geraint Bycroft
 Jon Clarke
 Tony Carpenter
 Peter Sabelis
 MAD-MAX
 Colin Swabey
 Roadtoad
 Matthew Greenfield
 Murray Moffat
 The Mayor
 Ross Archer

NOTES

IBM, AMIGA, MAC, COMMODORE, C64 and VIC 20
 Caters for most computers, doors, files, messages.

 Amiga Support ONLY.
 General
 Information, Help & files for Amiga Only.
 Auckland's First Out Gay SysOp

 Windows 3.0 shareware and messages.
 Lower age group 10-25, but older welcome.
 Files, doors, GIFs

 A haven for trekkers and apple users alike
 Files (IBM Shareware), quality, GIF pictures, doors.
 Atari ST, Atari 8bit, Usenet/FidoNet Mail
 Music
 Customer Support for Tech Pacific products.
 Mail, files, technical information, primarily IBM
 TL Systems Ltd support, primarily IBM
 Amiga users, message oriented.
 MAXboard Messages
 Atari. Some text files on hacking, phreaking
 Huge Amiga file support
 Specialising in Genealogy & Family History

BLLENHEIM - PREFIX 03

MACE 578-8604 BBS Express Ian Scott Run by Marlborough Atari Computer Enthusiasts

CHRISTCHURCH - PREFIX 03

All A Baud	343-0962	Starnet	Terence Blyth	Amiga
Amiga Info BBS	797-564	Falcon	David Hassall	Large Amiga File Base
Connection II	355-3896	Commnet	Jon Himing	Messages, Doors.
Direct Link	332-7297	RA	Mark Abbott	IBM files and doors
Enterprise III TNG	355-2166	Searchlight	Craig Blaikie	
Equinox Networks	385-4406	Dialog Pro	Geoff McCaughan	Files for all machine types. 1500+ newsgroups.
General Support	338-7100	Searchlight		PC General support
Lost Souls Domain	359-7031	Oasis	Calvin Broadhurst	
Mirth Control BBS	890-898	Maximus	Daniel Ayers	Messages. Chat & Socializing areas.
Modems Not Included	358-8253	Searchlight	David Robb	
Nationwide Computers Ltd	796-334	Searchlight	Warrick Atherton	Files (CDROM), messages
Never Never Land	811-088	Wildcat	Paul Sextstone	Areas for all computer types, Door games.
Online Support	667-324	Searchlight	John Clarke	PC related sales board, Clipper Users Group
Outer Limits	388-9021		Shawn Fuller	Amiga, door games
Planet Melmac	348-6522	Searchlight	Murray Cameron	Windows Files
Polyvox IV	649-027	Searchlight	Peter Ellens	IBM, files include many STM's and GIF's
Realm Of Insanity	338-6461	Searchlight	Seth Wogoner	Roleplaying games
RemoteAccess	349-3236	RA	Graeme Kerr	Files, messages, doors
Short Circuit	795-559	Commnet	Peter Meuldijk	
Simplicity BBS	352-0688	Oasis	John Haines	Atari 8bit support

BBS	PHONE	SW	SYSOP	NOTES
Source Board Split Infinity BBS SuperSystem IV Tony's BBS Trashcan BBS (The) Village [South] Xenophobia	656-301 384-4393 849-0830 383-1155 799-345 355-7490 358-9120	Searchlight RA Searchlight Opus Searchlight Wildcat C-Base	Ed Sickmann Paul Le Page Bob Curwood Tony Hall Chris Hellyar Dave Cooke Matthew Hallson	Programming orientation. Mac files support, all machines supported. Doors, Amiga and IBM files
DUNEDIN - PREFIX 03				
Midnite Modemer BBS Southern Vortex Taieri BBS	455-5359 489-3420 489-7777	Searchlight Searchlight Forem	Iain Lourie Chris Pheloung Barry Clearwater	Messages mostly, with online games.
GERALDINE - PREFIX 03				
Pioneer	693-9684	PCBoard	Barry Newel	
GREYMOUTH - PREFIX				
Bates Motel Gateway	768-6036 842-850	Searchlight Spitfire	Mike Rooney Grant Thomas	Supports Atari & IBM
FEATHERSTONE, SOUTH WAIRARAPA - PREFIX 06				
Foxtrot BBS	308-9456	Paragon	Mark Gooding	Mainly for Amiga, and MSDOS.
HAMILTON - PREFIX 07				
(The) BEST BBS (The) Bridge Baud BBS (The) Great Escape CBCS (The) Labyrinth CBCS USA Connection Waikato Amiga CBCS	849-0486 843-0086 846-1610 856-4227 856-6851 846-6918	PCBoard Paragon RA TAG	Aaron Westerby Ryan Beecher Fraser Kemp David Miller Carl Rayner Barry Blackford	CD ROM's give 4000Mb (4 gigabytes) of software. Amiga, Fred Fish Disks, Online games, Messages Door gamers and messages. Plenty of doors, and message areas. Files and games. Amiga User Group Members, Mugs and Visitors
HASTINGS - PREFIX 06				
Bay Baud CC's Baud	876-7683 876-3804	Spitfire	John Newson	Run by Hastings Computer Centre
HIBISCUS COAST - PREFIX 09				
Hotline	424-2004	Wildcat	Wayne	First BBS on Hibiscus Coast
INVERCARGILL - PREFIX 03				
Baud of the City? No Carrier BBS Land's End BBS Micro South Night Shift	218-6445 216-8076 214-4150 218-4056 217-6644	Searchlight RA Searchlight Searchlight Searchlight	Cathy MacKenzie Andrew Joll Ken Sutton Jamie Dowling Bill Niven	Message based, also online games. Operated by Cargill High School Educational emphasis Online games
KAITAIA - PREFIX 09				
Aotearoa BBS	408-1905		Tenga Reese	BBS shifted from Hamilton
NAPIER - PREFIX 06				
The Beer Club Jaybee's Plus Baud Tiny's Small Environment	835-1288 844-1144 844-1489 843-6783	RA RA RA	Grayson Orr John Bickerstaff Andrew Johnston Allan Harding	IBM Technical Programming DOS WIN OS2
NELSON - PREFIX 03				
Sun City BBS	548-9171	Wildcat	Damon Rose	MSDOS, AMIGA, Users, Doors, Wildcat Support
NEW PLYMOUTH - PREFIX 06				
AmigaLink Harley's Heaven The Hobbits Hole Informex Frontal Lobe	24-8118 758-7892 753-2353 775-584 751-1285	DLG Paragon Spitfire Xenolink	John Veldhuis Noel Oakley Michael Hobin Airdrie Black Adam Burt	Amiga/DLG files, Messages and Some Doors Amiga/PC, Door Games, Private files section Door gamers Run by Amiga User Group Taranaki inc. Philosophy, creativity & imagination theme
PALMERSTON NORTH - PREFIX 06				
ACME BBS Atari Rose City BBS The Big Bang Burger Bar	355-1342 358-0367 353-6213	Waffle BBS Express Searchlight	Craig Harding George Henry Rod McPherson	Usenet Users ARC Computer Club Members, Atari Support BBS MSDOS files.

BBS	PHONE	SW	SYSOP	NOTES
Christian Bulletin Board	356-2058	Spitfire	Shane Harvey	Christian BBS'ers
Closed User Groups Board	323-9660	Searchlight	John Poulsen	Closed User Groups
Cyberlink 2	359-2658	Searchlight	Dean Richards	
Dawghaus BBS	357-9245	Waffle	Alan Brown	Atari, Amiga, Mac files (no IBM)
Hamboard	357-1781	Wildcat	John de Burgh	General, Radio Amateurs
Oasis	358-8942	Proboard	Peter Tamehana	PC and Windows Users
Sidewalk	359-2142	Searchlight	Paul Lush	Doors and R18 Adult
Stonehenge	356-6375	Falcon	Grant Ovenden	
Top Gun BBS	351-5152	Searchlight	Savem Reweti	General
Transition BBS	357-7574	Falcon	Renze de Ruiter	Amiga, and Roleplaying Games support.
Xpress Board	358-1235	Wildcat	S Strawbridge	Based at Freyberg High school.
PARAPARAUMU - PREFIX 04				
The Gremlins	298-4194	Maximus	Phill McKenna	Doors: Barons, Overkill, Phantasia
Radio Chaos	98-5582	RA	Wayne Galloway	
RANGIORA - PREFIX 03				
Whispers BBS	313-5181		Ben Wheeler	
ROTORUA - PREFIX 07				
The Beast	3490-588	Opus	Peter Hendricks	CompuCom SpeedModem support, EchoMail
OTAGO - PREFIX 024				
VAX	779-068			Username: CCCIG, XMICRO, EDUCATION
TAURANGA - PREFIX 07				
Kiwifruit Coast	578-1333	Wildcat	Matthew Percy	
TE KAUWHATU - PREFIX 0817				
Waikato Technical	88-165		Philip Bradey	Messages, Files, Doors
TIMARU - PREFIX 03				
Computer SW LIB of NZ	615-9313	Searchlight	Bill Strauss	Online catalogue of Shareware.
WANGANUI - PREFIX 06				
The Wanganui Amigans	347-1200	Waffle		Message based
WELLINGTON - PREFIX 04				
Aces High	564-1222	Searchlight	Glenn Williams	Specialising in door games
Actrix & Springboard II	564-3429	Unix XBBS	Paul Gillingwater	Clarinet news service
Andrew's Folly	233-9126	Maximus	Andrew McMillan	Files, Messages, and PBM games.
The Board	564-6035	Major BBS	Mark Richardson	Online shopping and games, GIF/JPEG
Board Shitless	385-8971	Searchlight	Aimee Winn	Messages, intelligent conversation
The Bridge	386-1968	Odyssey	Julian Wright	
Casanova	387-2359	Searchlight	Mike Jones	Collectors of GIF (particularly pornographic)
(The) Cave III	564-3429	Kiwiboard	C. Lear	IBM PC files.
(The) Cave IV	564-2314	Unix	C. Lear	
CityNET	801-3060	VAX	Richard Naylor	General
(The) Clarion Exchange	388-9379	Maximus	Karen Hayward	Support for users of Clarion, programmers, etc.
Computer Exchange	499-3181	Searchlight	Greg Cooney	Run by Second Byte computers
Cutting Edge	526-4407	Searchlight	Gramps	
CYBERIA	387-8469	Xenolink	Ash Wednesday	Messages, special interest group for authors.
Digital Vaults III	473-6679	Spitfire	Gary Morrison	Sales BBS for PC Add Ons - users receive mailouts.
Dragon's Lair	565-1332	Spitfire	Night Stalker	20+ Trivia Doors, 20+ Online Games
Fred's Diner	568-3830	Searchlight	Gary Dickinson	Sometimes the fax is accidently left on.
Garfield's Greenhouse	528-0790	Searchlight	Damian Kennedy	
GenBoard	499-0490	Maximus	Murray Thessman	Specialising in Genealogy & Technical interests
(The) Graphics Connection	473-0981	Maximus	Mark Remfrey	Oriented towards CAD/Multi-Media/SoundBlaster Support
Harbour Board	476-2852	Forum ST	Chris Thorpe	ATARI ST, Inter-BBS doors games.
Hideaway	526-0221	Searchlight	Rick Malkin	Large numbers of door games
Leisure Board	298-5871	Maximus	George Snell	
Major Force!	566-7194	RA	Russell Pratt	Support BBS for Sierra games software
Maranatha	476-7542	Paragon	Bryan Daley	CCN (Christian) newsgroups available.
Meet Board	384-3918	Oracomm	Alan Merry	People wanting to meet people (dating)
MEGA-BAUD	389-5371	RA	Rick Smith	Run by NZ PC Assoc for members only (\$30).
Naos	478-3117		Ewen McNeill	Programming/Hardware hackers
No Bauds Barred	528-9730	Searchlight	Greg Cooney	Amiga and Windows 3 special interest groups
Open All Hours	384-2342	Wildcat	Mark Wilson	Wgtn Polytech. Info on courses.
Out of this World	233-1293	Searchlight	Wild One	General
Power Board	801-6599	Searchlight	Tony Hitchcock	Run by the PC Power Computer shop
Romboard	583-6040	Wildcat	Brent Wood	Full downloading access \$20/yr. CD-ROM PD software
Sail Baud	389-1516	Searchlight	Charles Folkema	Sales system run by Computer Peripherals

BBS

Seaboard
Sideways
SILICON FANTASIES
SMASH
Spider's Web
SPOTLIGHT
Stargate
STEPHEN'S STUDIO
Te Wahapu BBS
Tornado
TOWER OF HIGH SORCERY
Tracker's Plane
Video Drome
Waug Shorts

PHONE

478-1008
569-5695
565-0628
566-1021
477-3133
479-3540
566-6728
479-5609
388-5552
233-1843
566-8156
476-3361
388-5410
527-8817

SW

Kiwiboard
Waffle
Searchlight
Ultra
Searchlight
Searchlight
Wildcat
Spitfire
Opus
Waffle
Searchlight
Searchlight
Searchlight
Dumboard

SYSOP

Peter Longman
Patrick Cain
Logic
Gavin Cross
Jay Montilla
Nigel Lynskey
David Benfell
John Stephens
Richard Benton
Sai
Dalamar
Mad Gnome
Sam Hutton
Allan Honey

NOTES

Home & Business Computers
Wafflers, Acorn computers, cryptography
Amiga, PC and Atari St software.

General
General
Throbnnet, Intelc, MediaNet, MidiLink, MetroLink
Doors games, messages, few files.
Maori language support BBS
PC/Mac anti-virus BBS + files
Doors games.
IBM files, messages

Must be a member of the Apple user group.

WHAKATANE/KAWERAU - PREFIX 07

Apanui Link
PC-Link

308-5098
323-8925

Wildcat
Wildcat

Ralph Clulow
Grant Seamark

Whakatane Computer Enthusiasts Group
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WHANGAREI - PREFIX 089

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437-3976

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Bryan Rentoul

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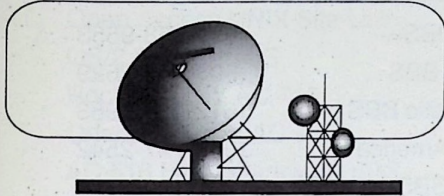
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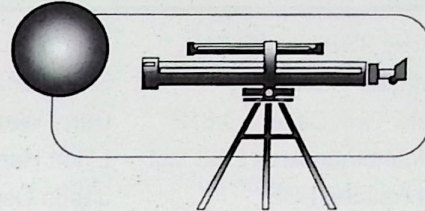
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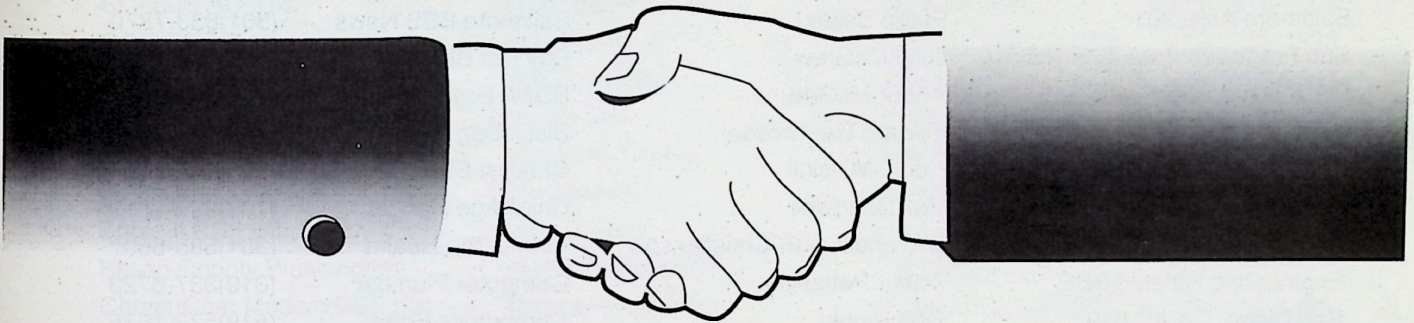


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BOARDWATCH

LIST OF BBS LIST KEEPERS

This listing comprises a list of those who compile and maintain lists of bulletin boards, either by topical category, or by some geographic area or definition - often by area code. The primary bulletin board system where the list can be downloaded electronically is also included.

BBS LIST TOPIC	LIST AUTHOR/EDITOR	CONTACT BBS	TELEPHONE
Austin Area BBS List AC 512	Gordon L. Harlan	--ACE*BBS--	(512)258-9553
Ham/Amateur Radio BBS	Stan Staten	3WINKs BBS	(301)590-9629
Minnesota Twin Cities AC 612	Barry Watson	Abiogenetic BBS	(612)489-7983
Tulsa Oklahoman Area BBS List	Linda Hargraves	Access America	(918)747-2542
Autocad Related BBS	Jason Osgood	Alacrity BBS	(206)643-5477
National BBS List	DP McIntire/Beth Spotts	Ameriboard	(412)349-6862
Tacoma Washington AC 206	Richard Langsford	AmoCat BBS	(206)566-1155
Houston Area 713	David E. Wachenschwanz	Atomic Cafe BBS	(713)530-8875
Baltimore Area 301	Phillip Bailey	Baltimore BBS News	(301)633-7870
San Francisco Area 408/415/510	Julie McGrew	Bay List BBS	(510)339-1045
Black Issue BBS	Arthur McGee	BDPA Bay Area BBS	(707)552-3314
Medical Issues BBS	Edward Del Grosso	Black Bag	(302)731-1998
Republic of South Africa	Henk Wolsink	Catalyst BBS	(041)34-1122
Airline Pilot/JUMPSEAT BBSs	Rex Chadwell	ChicAAgo Hangar	(708)980-1613
Conservation/Nature BBS List	D.Wendling/JS Christianso	Coin of the Realm	(301)585-6697
Engineering Related BBS	Arthur Petrzelka	Computer Plumber	(319)337-6723
San Diego, CA AC 619	Ron Dipold	Computer's Edge	(619)573-1675
Ontario Area 705	Alex Draper	Cottage Country BBS	(705)835-6192
U.S.S.R. BBS List	Serge Terekhov	Court Crimson King	7-3832-356722
Connecticut AC 203	Kevin Brook	Creative Edge BBS	(203)743-4044
Computer Shopper BBS List	BBS Press Service	CS List BBS	(913)478-3088
Portland Oregon BBS	Lisa Gronke	DawGone Disgusted	(503)297-9145
Technical Support BBS List	Gary Barr	Digicom BBS	(812)479-1310
96 List - 9600+bps BBS	Ken Sukimoto	Downtown BBS	(213)484-0260
Rhode Island Area 401	Mike Labbe	Eagle's Nest	(401)732-5292
Ecology/Conservation BBS	Bob Chapman	EarthArt BBS	(803)552-4389
Seattle AC 206/West Washington	Bob Dinse/Nanook	Eskimo North	(206)367-3837
Macintosh BBS	Bill Taylor	Fort Mill Tabby	(803)548-0900
BBS With Handicapped Focus	Bill McGarry	Handicap News BBS	(203)337-1607
National 800 Number BBS List	Michael Long	Hayes Online	(800)874-2937
Handicapped Issues BBS	Richard Barth	HEX BBS	(301)593-7357
Central California Area 805	Larry Honore	His Board	(805)652-1478
Chicago	David Nathan	HURK BBS	(708)801-0823
NAPLPS Graphics BBS	Ed Pimentel	IHBC BBS	(404)498-4254
California AC 310	Jim Walton	Illusions BBS	(310)804-3324
Atlanta Area 404	Rodney Aloia	INDEX System	(404)924-8472

BBS LIST TOPIC	LIST AUTHOR/EDITOR	CONTACT BBS	TELEPHONE
Desktop Publishing BBS	Frank Atlee	Infinite Perspective	(301)924-0398
Washington DC BBS List	Mike Focke	Interconnect	(703)425-2505
Selected BBS	Joseph Caplinger & Son	J&J's BBS	(513)236-1229
Wisconsin 608		JW-PC Dataflex.HST	(608)837-1923
Open Access UNIX Site List	Phil Eschallier	LGNP1 (login:BBS)	(215)348-9727
OS/2 Related BBS	Dave Fisher	LiveNet 1:170/110	(918)481-5715
Rochester NY AC 716	Tracy Logan	Logan's Run	(716)256-2659
Orlando Florida AC 407	Matt Drury	London BBS	(407)423-5226
AC 516 Free Shareware BBS	Harold Stein	Long Island Exchange	(516)385-7882
Raleigh NC Area Code 919	Mike Stroud	Micro Message Svc.	(919)779-6674
Genealogy Related BBS	Richard A. Pence	NGS-CIG	(703)528-2612
Atlanta Area 404	Online Atlanta Society	OASIS	(404)627-2662
St. Louis AC 314	Beth Brooks	Offworld BBS	(314)579-0700
OS/2 BBS Systems	Pete Norloff	OS2/Shareware BBS	(703)385-4325
ASP BBS Member List	Bob Ostrander	PBS-BBS	(317)856-2087
The List National BBS List	James Toro	PDSLO (The List)	(516)938-6722
New Jersey Area 201/609/908	Wayne R. Morton	Praedo BBS	(609)953-0769
Milwaukee Area 414	Jay Jadofsky	Priplanus	(414)442-0170
Apple II BBS with Internet con	Morgan Davis	pro-sol	(619)670-5379
Kitsap County Washington	Michael Schuyler	Quicksilver BBS	(206)780-2011
CompuCom Modem BBS List	Thomas Weathers	Referral Market BBS	(803)297-4395
List of Gay/Lesbian BBS	Eric Blair	S-TEK BBS	(514)597-2409
Area Code 215 PA and 609 NJ	Ron Brandt	Satalink BBS	(215)364-3324
Dallas/Ft Worth Area 214/817	Mark Robbins	Second Sanctum	(817)784-1178
South Florida Area 305/407	Eric Thav	Silicon Beach BBS	(305)474-6512
Southern California	Mike Hefferman	SOCAL Corner	(213)422-7942
Kansas City Area 816/913	Roy Timberman	Sound Advice	(816)436-4516
New Orleans BBS List	Jeff Jones	Southern Star BBS	(504)885-5928
Astronomy/Space BBS	John Pickens	Starbase III BBS	(209)432-2487
Chicago	Paul Chartraw	Stillwaters	(708)403-2826
South Jersey Area 609	Dave Schubert	The Casino EBBS	(609)561-3377
Arkansas Area 501	Bob Underdown	The Gaslight BBS	(501)444-8420
Graphical User Interface BBS	David Shapiro	The Gooley (GUI) BBS	(212)876-5885
National Adult BBS List	Clayton Manson	Titan BBS 1:3612/140	(904)476-1270
Detroit Area 313	Horst Mann	Tony's Corner	(313)754-1131
Virginia AC 703/804	Scott Dickinson	TOSOR BBS	(703)366-4620
Darwin National BBS List	Meade Frierson	USBBS Update Line	(202)547-3037
Wildcat! BBS	Jim Harrer	Wildcat! HQ	(805)395-0650
Cleveland Area 216	Eric Rickin	Wine Cellar	(216)382-2558
Area Code 517 - Mid-Michigan	Rick Rosinski/SAMM	Wolverine BBS	(517)695-9952
Central California AC 209	Jack Porter/Madera UG	Zen Den Systems	(209)675-8436

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Chat Chalet (201)791-8850 Saddle Brook New Jersey since 04/91. Sysop: Ron Meier. Using Major BBS 5.31 with 16 lines on MS-DOS 80386 with 120 MB storage. Supra at 2400 bps. \$10.00 Monthly fee. Chat System. Send us your picture we will make it a Gif and put it on the BBS for all to see. "Where New Friends Meet"

Jezebel's Parlour BBS (201)927-2932 Flanders New Jersey since 04/92. Sysop: Beverly Delisa. Using TBBS 2.2M with 12 lines on MS-DOS 80386 with 120 MB storage. U.S. Robotics at 9600 bps. \$50.00 Annual fee. Over 3 gigabytes of files, including adult graphics. New in-house scanned Gif files added each week. Online games and databases, user to user chat, conference areas, and adult matchmaking. The BBS with the feminine touch.

The Download America BBS (203)676-1708 Farmington Connecticut since 09/88. Sysop: Eric Knight. Using RBBS 17.4 with 6 lines on MS-DOS 80386 with 1200 MB storage. U.S. Robotics at 14400 bps. \$10 one-time! fee. Named one of TOP FIVE BBSs in United States; "Pournelle's Pick" in Jerry Pournelle's new book! "BBS OF THE MONTH" in Computer Shopper. 40,000 files online including all PC-SIG Users from 35 countries! FREE international messaging! FUN!

Computers & Dreams BBS (212)888-6565 New York New York since 01/91. Sysop: William P. Stewart. Using PCBoard 14.5a/E6 with 6 lines on MS-DOS 80486 with 2600 MB storage. U.S. Robotics at 57600 bps. No fee. New York City's Best BBS! You don't believe us? Well call and find out for yourself. It's FREE. How can you go wrong? Dozens of GAMES, 1000s of FILES, 1000s of GIFs, USA Today & Boardwatch Magazine ON-Line, Prizes, RIME & ThrobNet, PC Pursuitable: NYNYO.

The Westside (213)933-4050 Los Angeles California since 04/87. Sysop: Dave Harrison. Using Metropolis 1.06b with 70 lines on Qnx with 5000 MB storage. AMT 2400 at 2400 bps. \$7 Monthly fee. One of LA's friendliest, largest and most active Adult bbses! Chat Online Games Windows Shareware Files 25,000+ Gifs Animations Adult Stories Public Forums More! 4000+ Members. Special Disabled Vet Senior Student Rate. FREE Trial for Boardwatch Readers!

The B-C-S BBS (213)962-2902 Los Angeles California since 02/92. Sysop: Bill Weinman. Using WildCat 3.55P with 4 lines on MS-DOS 80486 with 2500 MB storage. U.S. Robotics at 16800 bps. \$52 Annual fee. Los Angeles Area Code. Four High Speed Modems (DS) and growing. Gigs of Files. The latest Files added every day. Robocomm, Qsoftware support. Intelligent Conversations. Excellent Conferences, Many Online Services, Home of CalNet. Free Access. Come Join.

The Anterra Network (215)675-3851 Hatboro Pennsylvania since 03/90. Sysop: Steve Ferguson. Using WildCat! 3.52 with 6 lines on MS-DOS 80486 with 2300 MB storage. U.S. Robotics at 14400 bps. \$5 Monthly fee. Philadelphia Area's Best BBS! Basic access is free, so give us a call! Over 8,000 Files online. 10,000 Messages on 3 national Nets. Many online games (Some multi-user Real time). Adult areas with our own Models. Swinger's Connections. Six way chats.

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The Newtown Express BBS (215)860-9724 Newtown Pennsylvania since 10/91. Sysop: Anthony Maglietta. Using PCBoard 14.5a with 6 lines on a high-speed LAN with 6000 MB storage. U.S. Robotics at 16.8K bps. \$15 Quarterly fee. Supporting 2400-16.8K and HST. 38,000+ files on-line. 900+ Megs Adult. 5+ Megs of new uploads daily. We do custom scanning! 700+ sigs. You request a door and we will set it up! (1 per subscription). All nodes run on dedicated 386/25's. Call today!

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The GaRBaGe DuMP BBS (303)457-1111 Denver, CO & Albuquerque, NM since 12/90. Sysop: Simon Clement/Dean Kerl/David Kerl. Using Galacticom MBBS 5.31 with 41 lines on Dual 486 LAN Server with 850 MB storage. Supra at 14400 bps. 90 Days no fee. Access in Albuquerque: 505-294-5675 FREE w/Validation Form, INSTANT Validation with Visa/MC. Online ADULT CHAT, files, multiplayer games, UNCENSORED SIGs. 1200+ Calls/Day, PURSUITABLE. Our motto says it all: CAUTION! ADULTS AT PLAY! Voice 505-294-4980.

The Comm-Post (303)534-4646 Denver Colorado since 06/86. Sysop: Brian P. Bartee. Using TBBS 2.2M with 8 lines on MS-DOS 8088 with 3000 MB storage. U.S. Robotics at 14400 bps. \$40 Annual fee. ASP Approved BBS & one of the finest collections of IBM-Compatible Shareware. Many free download areas including extensive libraries of Astronomy Software & Data files. Access to 100's of Message Echos. VISA MC AMEX DISCOVER Welcome. Voice: (303)534-4538

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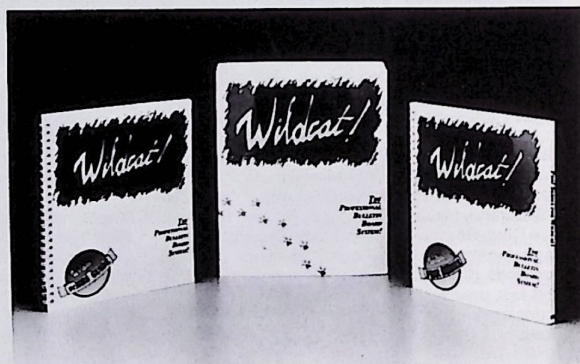
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America's Suggestion Box	(516)471-8625	BBS Devoted to Collecting and Distributing Consumer Feedback	Joseph G. Jerszynski	Ronkonkoma, NY
American Cybernetics BBS	(602)968-1082	Multi-Edit Product Support BBS	American Cybernetics	Tempe, AZ
ANARC BBS	(913)345-1978	World Radio/TV Handbook - Short Wave Freq Lists/Scheds.	Assoc. of North American Radio Clubs	KS
APCUG - GlobalNet	(408)439-9367	Association of PC User Groups - Over 2000 UG officers	Paul Curtis/APCUG	Scotts Valley, CA
Applied Modeling Research RBBS	(708)820-8344	Environmental Protection Agency Atmospheric Models	William Peterson/EPA	Hurdle Mills, NC
Aquila BBS	(714)727-4723	6 GB 25 Nodes Fidonet/Interlink/Metronet MCE IL/CHI Graphics	Kevin Behrens/Steve Williams/Doug Bell	Aurora, IL
AST Technical Services BBS	(908)769-6397	Support for PC 6300 and Other AT&T PC Models	AST Research Inc.	Irvine, CA
AT&T Support BBS	(416)756-4591	Support for AT&T Modems and Video Cards	American Telephone/Telegraph PC Division	Plainfield, NJ
Atomic Cafe BBS	(713)530-8875	Houston Area BBS list and Connect Magazine	ATI Technologies	Scarborough, Ontario
Attention to Details	(714)681-6221	Utilities/ASP/Patrinquin Utilis/Protocols	David Wachenschwanz	Houston, TX
Audiophile Network	(818)988-0452	High-end Audio Components, Music, Video Reviews	Clint Bradford	Mira Loma, CA
Automobile Consumer Services	(513)624-0552	New Car Pricing Reports - Used Car Value Reports	Guy Hickey/Quatre Speakers	Van Nuys, CA
AviTechnic 1:261/662	(301)252-0717	Software Distribution System - BBS Utilities	Automobile Consumer Services Inc.	Cincinnati, OH
BBS America	(214)680-3406	Home of DFW Online Electronic Newsletter	Tom Hendricks	Lutherville, MD
BBS Press Service	(913)478-9239	Home of Online Digital Music Review	Jay Gaines	Richardson, TX
BCS BBS	(310)821-4471	Los Angeles' First Super BBS Under Development	Alan Bechtold/BBS Press Service	Topeka, KS
Best Friends BBS	(714)828-7093	DLX Multiline Chat/Match Social/Sexual	Jim Lee	Los Angeles, CA
Beyond Eternity	(310)371-3734	Home of EEEKI Bits - Weekly Electronic Trivia Magazine	Ann and Joe Wiseman	Fountain Valley, CA
Big Peach BBS	(404)446-6650	Home of Automenu and Treview Software	J. Black/K. Taghadossi	Torrance, CA
Bird Info Network	(302)423-9775	Breeding, Raising, Taming, Exotic Birds	Marshall Magee/Magee Enterprises	Norcross, GA
Boardwatch Magazine Online Info	(510)849-2684	Support for Macintosh owners - files - conferences.	Terry Rune/Dave McClaugage	Arvada, CO
Book BBS	(303)973-4222	Distribution Service for USA Today/Boardwatch/Newsbytes	Berkeley Macintosh Users Group	Berkeley, CA
Book Slacks Unlimited	(216)567-6130	Information on 2000 Computer Books - 800 order number	Boardwatch Magazine	Littleton, CO
Borland Download BBS	(408)439-9096	200,000 Book Titles Database - Online Ordering	Business & Computer Book Store	Willow Grove, PA
Bruce's Bar & Grill	(215)493-5242	Utilities, Macros, Programming Examples for Borland Products	Charles Stack	Cleveland, OH
Bucks Telematics 273/201	(203)236-3761	24-line Social System - Chat - Games - Downloads	Borland International/Mike Fitz-Enz	Scotts Valley, CA
C.A.R.L. Library Service	(615)824-4938	Local, National, International Message Conferences	Bruce Lomasky	West Hartford, CT
CAD/Engineering Service	(303)758-1551	Citations to 4 Million Texts in Colorado Library System FREE	Richard Press	Denver, CO
Canada Remote Systems	(416)798-4713	Computer Aided Design File Distribution Network 1:16/32	Colorado Alliance of Research Libraries	Hendersonville, TN
Capital PC User's Group BBS	(601)738-9060	23GB/400000+ files, 3500 Conf's, USENET, IBM/Amiga/Mac	Stan Bimson	Mississauga, Ontario
Castle Tabby 107/412	(908)988-0706	One of the oldest PC User's Groups - 5500 members	Neil Fleming/Jud Newell	Rockville, MD
Celebration Station	(207)374-5161	Customer Support for Cardz Computers and Fractern, Inc.	Capital PC Users Group/Roger Fajman	Vancouver, BC
Census Bureau Office Automation	(301)763-4576	Home of TABBV Fidonet Interface Program for Apple Macintosh	John Smith	Bradley Beach, NJ
Central Point Software	(503)690-6650	Adventure Games, Chat, and Sigs - Children	Michael E. Connick	Blue Hill Falls, Maine
Channel 1	(707)354-8873	Microcomputers and Office Automation	Noel Stookey (Paul of Peter, Paul & Mary)	Suitland, MD
Chicago SysLink	(708)795-4442	PC Tools - Central Point Anti-virus support board	US Dept. of Commerce/News Frankel	Beaverton, OR
chinaet	(312)283-0559	70-line PCBoard - 8 GB Files - Internet - 1000's msg. confs.	Central Point Software Inc.	Cambridge, MA
Classi Computer Fields	(317)359-5199	Special Interest Areas for Ferret/Pet Owners: TFS80/Aviation	Brian Miller/Tess Heder	Berwyn, IL
Classified Connection BBS	(619)566-7347	UNIX System offering Internet Mail	George Matyaszek	Chicago, IL
Cleveland Freetnet	(619)456-0815	Online System for Classified Advertisements	Randy Suess	Indianapolis, IN
CocoNet	(303)534-4646	Gifty Girls - Nude GIF Images of the Girl Next Door	Steve Edsall/Trader Newspaper	Chicago, IL
Comm-Post, The 104/666	(719)520-5000	Cleveland City Info/Public Library - Free Internet Mail Box	Bill Kennon	San Diego, CA
CommunityLink @DCWAS	(703)765-0501	CocoNet Support/Demo - Hires Graphics BBS for Unix Systems	Case Western University/AT&T/Ohio Bell	Cleveland, OH
Compact Audio Disk Exchange	(415)824-7603	Astronomy - 725+ MB of Files	Brian and Patricia Dear	La Jolla, CA
Computer Business Services	(714)396-0014	News and Entertainment - 17 Lines Community Focus	Brian Barte	Denver, CO
Computer Garden	(301)546-1508	DC Tour Info. & Help Online Publications, Treknet, Fidonet	Klaus Dimmler	Colorado Springs, CO
Computerized Bulletin Board Sys	(708)849-1132	Buy/Sell/Trade Compact Audio Disks Online	Wayne Rutledge/Bob Burnett	Alexandria, VA
Computing Canada Online	(416)497-5263	Book/Publishing Consultant Nick Anis BBS	Wayne Gregori	San Francisco, CA
Corporate Data Exchange (CDX)	(609)683-4422	Treasure Hunting - Metal Detectors - Online Catalog	Nick Anis Jr.	Diamond Bar, CA
CrossTalk Communications BBS	(404)740-8428	First Electronic Bulletin Board - Creator of XMODEM Protocol	Milford P. Webster	Salisbury, MD
Cui-de-Sac Bar & Grill	(508)429-1784	Adjunct to Excellent Canadian PC Newspaper	Ward Christensen	Chicago, IL
		PR Newswire/Business Wire. Login: hello user.cdx	Computing Canada Newspaper	Willowdale, Ontario
		Product Support for Crosstalk for Windows/MK4/XVI	LaFountain Research Corp/Ad LaFountain	Princeton, NJ
		Multiline Service - Ham Radio - Humor - TDBS Applications	Digital Communications Associates	Roswell, GA
			Pete White	Holliston, MA

CyberStore - a COCONET BBS	(604)526-3676	All lines to v.32bis/v.42/v.42bis. CyberStore Online Info. Systems Inc.	CyberStore Online Info. Systems Inc.	New Westminster, BC
Dark Side of the Moon	(408)245-7726	Home of WAFFLE, Unix UUCP BBS Software for DOS and UNIX	Thomase E. Dell/Darkside International	Mountain View, CA
Data Core BBS	(310)842-6880	25 line Major BBS	Matthew Schoen/Delta Enterprises	Los Angeles, CA
DataLink RBBS System	(214)394-7438	Weather Satellite Imaging, NOAA Satellite Tracking-AMSAT-NA	Dallas Remote Imaging Group/Jeff Wallach	Carrollton, TX
Dawg Byte	(615)385-4268	ANSI Art Club 1:116/29	Kevin Snively	Nashville, TN
Denver Exchange, The 104/909	(303)623-4365	Denver's Most Diverse Gay/Lesbian Info Service	James Craig	Denver, CO
DragonNet 386/451	(409)765-5459	Multiline MAJOR BBS with 4 GB - 64 lines Interactive Games	Robert Michael/Dragon Profit Systems	Galveston Island, TX
EarthArt BBS	(803)552-4389	Wildlife/Conservation Art Gallery GIF Images	Ambassador Wildlife Gallery/Bob Chapman	North Charleston, SC
East Bay X-Change 372/888	(803)556-7485	Home of XRS Offline Mail Reader	Mike Ratledge	McClennanville, SC
Ed Hopper's BBS	(404)446-9462	Home of uPCB - PCBoard Utility for UUCP Connections	Ed Hopper	Pearland, TX
Ed-Net	(604)988-4442	Vancouver School Board Multi-Line Educational Network	Barry Macdonald	Vancouver, BC
Electric Ideas Clearinghouse	(206)586-6854	Energy Efficiency Efforts In Pacific Northwest-HydroElec	Bonnieville Power Administration WSE	Olympia, WA
Electronic Publishers BBS	(503)624-4966	News-Finance-Sports-Games-2GB File Library	Brian Cash	Portland, OR
Electronic Zone, The	(412)349-3504	Specializing in Hypertext	William R. Forbes	Indiana, PA
Energy Info Admin E-Publications	(202)586-8658	Variety of Petroleum/Coal/Electricity Energy Statistics	US Department of Energy	Washington, D.C.
eSoft Product Support BBS	(303)699-8222	Home of The Bread Board System (TBBS) BBS Software	Phil Becker/eSoft Inc.	Aurora, CO
Event Horizons	(303)697-5100	64 Line Digitized Graphics Image Library - Adult GIF files	Jim Maxey	Lake Oswego, OR
Exchange BBS, The	(713)521-2191	Largest Gay/Bi/Lesbian Multiline BBS in Houston	James Craig/John Fields	Houston, TX
EXEC-PC	(414)769-4210	Largest BBS in US - 230 Lines - 70,000 files - 7 Gigabytes	Bob Mahoney	Elm Grove, WI
Executive Network	(914)667-4567	Interlink Netmail National Host - Multiline PCBoard System	Andy Keoves	Mt. Vernon, NY
Eye Contact BBS	(415)255-5972	22 line Oramcom - Gay Issues - Popular Chat System	Bill Montgomery	Mill Valley, CA
Falken Support BBS	(703)803-8000	Support for FALKEN software - 16 lines - doors - chat	Ren L'Ecuver	Woodbridge, VA
Farwest BBS	(604)381-3934	Large Western Canada Galactocomm Info System	Scotty Olson	Victoria, BC
FAX/Satellite Services BBS	(619)224-3853	NOAA Weather Satellite Images - Russian/Japanese Sat Pics	Federal Communications Commission	San Diego, CA
FCC Public Access Link	(301)725-1072	Equipment Authorization Status Advisory Service	US Office of Personnel Management	Columbia, MD
Federal Job Information Center	(313)226-4423	Federal Job Opportunity Lists available online	Federal Library Information Network	Detroit, MI
FEDLINK ALIX II	(202)707-4888	Info on Federal Libraries - Excerpts Library of Congress News	Tom Jennings	Washington, D.C.
Fido Software BBS 1:125/111	(415)863-2739	The First Fido BBS and home of Fido BBS 12s	J.J. van der Maas	San Francisco, CA
Fido Tech Stand	31-30-735900	Fidonet Technical Information for Holland	Bill Essex	Utrecht, Holland
FOG City BBS 125/10	(415)863-9697	Gay Community BBS - AIDS Info - Desktop Publishing - MACs	Bill Essex	San Francisco, CA
Fred the Computer	(508)872-8461	Newspaper BBS. Wierdnet Newswire. List of MA Libraries	Middlesex News-Adam Gaffin	Framingham, MA
FreeBoard BBS, The	(804)744-0797	Desktop Publishing File Distribution Network 1:264/212	Bill Hunter	Midlothian, VA
FSBBS Prototype System	(805)543-8227	Home of FSUUCP and FSBBS - Unix Communications for DOS	Chris Ambler, Fubar Systems	San Luis Obispo, CA
Fun Connection	(503)753-8431	Multiline Entertainment - 8 Lines Games/Chat/News	Vincent Reece	Corvallis, OR
Garbage Dump, The	(505)294-5675	Online Chat Service - Adventure Games - National Chalkink	Dean Ker/Datasafe	Albuquerque, NM
Gateway Communications BBS	(714)863-7097	Novell Netware/TCP-IP Shareware Utilities	Gary Gabrick	Irvine, CA
Gateway On-Line	(313)291-5571	Interactive Chat/Multiplayer Games, Usenet/Internet E-mail	Jeff Bretnier/Bill Mullen	Rockwood, MI
GDP Technologies	(303)673-9470	Outstanding IBM Shareware on a small system	Tom Getty's	Lafayette, CO
General, The	(619)281-8616	Popular File Library - GIF Images	Marc Teiler	San Diego, CA
GISnet BBS	(303)447-0927	Graphics Information Systems/Mapping topics	Bill Thoen	Boulder, CO
GLIB	(703)578-4542	Fed and Lesbian Information Bureau - 11 Lines - 9600 bps	Community Educational Svcs. Foundation	Arlington, VA
GPO WINDO Online Service	(202)512-1387	Fed Information from EPA, DOE, State Department - others	US Government Printing Office	Washington, DC
Greenpeace Environet	(415)512-9108	Ecological and Peace Issues - Disarmament/Toxics/Wildlife	Dick Dillman/Greenpeace	Norcross, GA
Hayes Advanced Systems Support	(800)874-2937	Customer Support Line for Hayes Customers - V-series/Ultra	Hayes Microcomputer Products	Peoria, IL
Heartland Free-net	(309)674-1100	Community Online Service - Free Internet E-Mail Boxes	Peoria County Board/Bradley University	Philadelphia, PA
Herpet/Satronics TBBS	(215)698-1905	Reptile and Amphibian Studies - Poison Snakes/Toads/Fish	Mark Miller	Berkeley, CA
HH Info-Net BBS	(203)246-3747	MS Windows and OS/2 Files our specialty	Lee Winsor	New Hartford, CT
HoloNet	(510)704-1058	National Access-INTERNET USENET CHAT, GIFS, FILES	Gene and Katie Hamilton	St. Michaels, MD
HouseNet BBS	(410)745-2037	Home Fixup/Repair/Renovation Tips, Advice, and Articles	Russell McOrmond	Ottawa, Ontario
Hystercs	(613)231-7144	Amiga File Distribution Network 1:163/109	IBM National Support Center	Atlanta, GA
IBM National Support Center BBS	(404)835-5300	Telephone Sales Trade Magazine Newsletter Exchange	Harry Newton Publications	New York, NY
Inbound/Outbound/Teleconnect	(212)989-4675	Excellent list of Atlanta BBS systems online	Rodney Aloia	Marietta, GA
Index Systems	(404)924-8414	Demo BBS for InfoHot BBS Software - Multiline - Database	A-Comm Electronics Inc.	Lexington, KY
Infinity World	(606)278-2002	Space Database - Online Store - Chat	John Williams	Hasbrough Heights, NJ
InfoHost Demo BBS	(201)335-2253	LAN Related Files and Utilities 1:124/6101	Arthur Gaffen	Dallas, TX
Infotink for Upper East Tenn.	(615)434-2551	Support for Intel PC Products - Inboard 386/AboveBoard 286	Mike Sussell	Hillsborough, OR
Inns of Court, The	(212)274-8110	46 Lines - 100 Directories - Full Usenet Feed - 8.2 GB	Don Shepherdson	New York, NY
Intel PCEO Support BBS	(503)645-6275	Online Investment/Stock Market Information/Tech Analysis	US Dept. of Navy / Chris Buechler	Bellevue, WA
Invention Factory	(206)285-5359	Navy Judge Advocate General's Information Network	JDR Microdevices	Arlington, VA
Investor's Online Data	(703)925-0748	Online Hardware Order - Catalog - 1.1 GB Files - Quizzes	Alpha Systems Inc./Bill Griffin	San Jose, CA
JAG-NET	(408)559-0253	Online Job Listings - 2186 Technical Pos. - 10,000 Corps	Keith P. Graham	Roswell, GA
JDR Microdevices BBS	(914)992-8937	OPTIK TEXT2COM, CBOOT, very good shareware utilities	Federal Reserve Bank of Minneapolis	Nyack, NY
JOBS	(914)623-0039	Prime Rate-Fed Funds-T-Bill-Discount Rate-Economic Data	Jim and Karen Burt	Minneapolis, MN
Keith Graham Shareware Support	(612)340-2489	400 MB Books, Writers Area - TRS 80 Support	Artisoft Inc.	Boulder, CO
KIMBERLY BBS	(303)665-6091	Support for LANtastic local area network	Tim Pozar	Tucson, AZ
King's Market BBS 104/115	(602)293-8065	Home of UFGATE - Software to connect PCs to UUCP/Usenet	Leading Edge Computer	San Francisco, CA
LANtastic BBS	(415)695-0759	Support for Leading Edge Computer Owners		Westborough, MA
Late Night Software 125/555	(508)836-3967			
Leading Edge Auto Info Line				

BOARDWATCH MAGAZINE

NATIONAL LIST OF ELECTRONIC BULLETIN BOARDS AND ON-LINE INFORMATION SERVICES - JANUARY, 1993

SERVICE	PHONE	DESCRIPTION	SPONSOR/SYSOP	LOCATION
LegalEase	(509)326-3238	Legal Issues/Forms - Law BBS List	Bill Sorcinelli	Spokane, WA
MAC-LINK	(514)486-8959	Macintosh Oriented Support BBS - 6 Lines - Infomat/BIX	Mark Smith	Montreal, Quebec
Macrot Bulletin Board	(412)846-5312	Support for Second Sight BBS Software for Macintosh	Jeff Driggs/FreeSoft Company	Beaver Falls, PA
MacInformational	(803)798-3755	Largest MAC BBS on East Coast	Ralph Young	Columbia, SC
Magpie BBS	(212)420-0527	Support/Demo System for Magpie BBS/Conferencing Software	Steve Manes	New York, NY
MaxiHost Support BBS	(209)836-2402	MaxiHost BBS - small, very easy to run BBS	Don Mankin	San Ramon, CA
McAfee Associates BBS	(408)988-4004	Computer Virus Information - VIRUSCAN and CLEANUP	John McAfee/CVIA	Santa Clara, CA
METRO Online Entertainment	(212)831-9280	32 line DLX with City Guide/Ski Database - Matchmaker - Chat	Bruce Kamm/Metro Online Services	New York City, NY
Micro Foundry, The	(915)598-0398	2.2 GB Downloads - Your Online Software Source - Boardwatch	Thomas Nelson/Clockwork Software	San Jose, CA
Micro Message Service	(919)779-6674	USA Today/Boxoffice Magazine - Large Download Area	Micro Tech	Raleigh, NC
Micro Tech BBS	(314)334-6359	Support for OSIRIS Multiline BBS Software - IRIS Mail	Microrim Corporation	Cape Girardeau, MO
Micronim Technical Support BBS	(206)649-9836	Support for Popular R:Base Relational Data Base System	Microsoft Corp/Scott J. Honaker	Redmond, WA
Microsoft Download BBS	(206)936-6735	Windows Technical Notes and Support Information	MSI - Reed Lewis	Bellevue, WA
Microsystems Software Inc.	(508)875-8009	HandWare Software for Handicapped - CodeRunner C Utilities	Phantom Access Technologies	Framingham, MA
MindVox	(212)988-5030	Internet Access. E-Mail, Newsgroups, ftp/teinet	Ben Husset	Minneapolis, MN
Minnesota Spacenet	(612)920-5566	Minnesota Space Frontier Society - NASA News	Tom Trimpeids	Granada Hills, CA
MOG-UR'S EMS The	(818)366-1238	5 Lines - 8 Networks CD-ROMS - 2.8 GB Hub Services HSTN/32	Edward Lee Wood, Jr.	Roanoke, VA
Mountain Air BBS	(703)427-0226	Adult Based BBS	Clarke Uimer	New York, NY
Movie BBS	(718)939-5462	Movie Reviews and Information - Television	National Assoc. of Cave Divers	Gainesville, FL
N.A.C.D. BBS	(912)246-3280	Cave Scuba Diving - Superb Special Topic System	Gary Sanders	Westerville, OH
N8EMR Ham BBS	(614)895-2553	login:hbbs - HAM Radio/AMSAT Unix System - Satellite/Packet	MicroStar Corp.	Nepean, Ontario
NAPLPS Graphics BBS	(613)727-5272	NAPLPS Graphics Terminal and Editor Software	Navy Regional Data Automation Center	NAS Norfolk, VA
NARDAC BBS	(804)445-1627	Zenith Computer Support - List of Federal Micro User Groups	Marshall Space Flight Center	Huntsville, AL
NASA Spacelink	(205)895-0028	NASA Educational Affairs Div. - Flight Data/Space History	Ben Cunningham	Nashville, TN
Nashville Exchange	(615)383-0727	12 line TBBS - Games/TDBS Software Development 1.8 GB	National Genealogical Society	Arlington, VA
National Genealogical BBS	(703)528-2612	Family History - Genealogical Research - Gravestone Haunting	Dept. of Navy / Bill Walsh	Washington, D.C.
NAYWESA	(202)439-6639	Naval Weapons Engineering Support	Network World Magazine/CW Communications	San Jose, CA
Netcom Internet Guest System	(408)241-9760	Internet Access System - type "guest" at login for info.	Butch Walker	Framingham, MA
Network World Bulletin Board	(508)620-1178	LAN and WAN issues and Technology	Nat. Institute for Standards/Technology	Rocky River, OH
Neurophysiology Bound 157/3	(216)356-1431	Support Groups for Disabled/Physically Impaired	Nick De Wolf	Boulder, CO
NIST ACTS	(303)490-4775	Automated Computer Telephone Service - Sync PC to NBS Time	National Oceanographic/Atmospheric Admin	Aspen, CO
Nixipix	(303)920-1263	Large Library of Adult GIF Graphics Images	Mike Neuhaus Gus Smedstad	Boulder, CO
NOAA Space Environment Lab	(303)497-5042	Solar Flare/Geomagnetic Data Online	The Mitchell Group	Grand Rapids, MI
NotGate Consulting	(616)530-3392	Home of PAK archive utility	Environmental Protection Agency	Laurel, MD
NOAQPSTTN	(919)541-5742	Collecting of Coins, Medals, and Exonumia	Robert Orr/Online Atlanta Society	Decatur, GA
OASIS BBS	(404)627-2662	Air Quality Planning and Standards Technology Transfer Net	Mike McCann/Center for Safety in Arts	New York, NY
Odyssey	(212)385-2034	Job Safety Issues for Artists, Musicians, Entertainers	Michael Allen	Monrovia, CA
Occupational Health/Safety BBS	(818)358-6968	Adult Multiline Chat System - Games - Magazines - Downloads	US Department of Education	Washington, D.C.
OERI BBS	(800)222-4922	Educational Statistics and Data - Performance Stats -	Dave Hughes	Colorado Springs, CO
Old Colorado City Communications	(719)632-4111	Political Discussions - Unix UUO Public Access - Multiline	Gary Walsh/Tom Haavisto	Thorndale, VA
Online Now	(807)345-5522	Canada's shareware house is online now	Hayes Microcomputer Products	Norcross, GA
Online With Hayes	(404)446-6336	Hayes Public Bulletin Board - Conferences/SIGS/Support	Don Crago	Pooraka South Australia, CA
Oracle PC	(6106)260-6222	South Australian TBBS Multiline System	Surf Computer Services	Rancho Mirage, CA
Oracom Support BBS	(619)346-1608	Sales and Support for Oracom Multiline BBS Software	Fran and Norm Saunders	Colesville, MD
Osprey's Nest	(301)989-9036	Birdwatching, Bird feeding, Naturalist/Ecology Issues	Mike Mathews	Hicksville, NY
Ozone Hole, The	(504)891-3142	Boardwatch-USA Today-Internet Usenet-RIME	James Toro	Tampa, FL
P.D.S.L.O. BBS	(516)938-6722	Home of THE LIST National BBS List	Gwyn Reedy/PacCom Inc.	Cleveland, OH
PacComm BBS	(813)874-3078	Packet Radio Equipment Supplier - TNC/PSK Modems	Norm Henke	Edmonston, MD
PC Ohio	(216)381-3320	Shareware library with 100% USR HST access - 24 lines	Pennywise	Amherst, MA
Pennywise	(800)752-3012	Online Office Supply Sales Service	Univ. of Mass. Dept. of Physics/Astronomy	Pinecliffe, CO
PHYSICS Forum BBS	(413)545-1959	Physics and Astronomical Sciences	Craig Baker	Montreal, Quebec
Pinecliffe BBS 104/28	(303)642-7463	Large Shareware Library/Echomail Conferences since 1985	Timothy Campbell/Pinnacle Software	Glendale, WI
Pinnacle Software BBS	(514)345-8654	Support for Sapphire BBS Software	Phil Katz/PKWare Incorporated	Tidewater, VA
PKWare BBS	(414)354-8670	Home of PKZIP 1.10 Compression Utility	Tom Terrific	West Lake Village, CA
Pleasure Dome	(804)490-5878	Sexually Explicit Fantasy Chat System - Adults only	Thomas Smith/DataStorm Technologies Inc.	Columbia, MO
Practical Peripherals BBS	(805)496-4445	Support BBS for Practical Peripherals Modems	Tim Brown/Computer Solutions	Marshfield, WI
ProComm Support BBS	(314)875-0503	Home of ProComm 2.4.3 and ProComm Plus Comm Prgrms	Public Brand Software	Indianapolis, IN
Promised Land, The	(715)387-1339	16-Line/2.5GB/11,000+ Files/WINDOWS, Chat & More		
Public Brand Software BBS	(317)856-2087	Commercial Shareware Vendor		

Public Data Network.....	(503)474-6662	64-line System with \$2.50/hour Local Access	Tony Javovic/Public Data Network.....	Grants Pass, OR
QMail Deluxe Support BBS.....	(615)230-8822	Support for QMail Deluxe and 1stReader offline mail utils	Mark (Sparky) Herring.....	Germentown, TN
Qualitas, Inc. BBS.....	(301)907-8030	386MAX and BlueMAX Memory Management Software Support	Qualitas Inc.....	Bethesda, MD
QuickBBS Support BBS 363/34.....	(407)896-0494	Product Support for QuickBBS Software	Richard Creighton/Steve Gabrilowitz.....	Orlando, FL
Random Access Information Svc.....	(503)695-3250	11,000 GIF Images - 20,000 DOS/Windows Shareware Files	Janice Stevens.....	Corbett, OR
Ronin BBS.....	(214)938-2840	Traditional File and Message BBS	Chuck Mattern.....	Red Oak, TX
Rose Media.....	(416)733-2780	19 GB - Home of Rosemail - Publications/Conferences	Vic Kass.....	Willowdale, Ontario
Rusty & Edies.....	(216)726-0737	Large ML PCBoard run by Husband and Wife - NFL/Tradewars	Rusty and Edwina Hardenburgh.....	Boardman, OH
Salt Air BBS.....	(801)261-8976	Home of PCBoard BBS Software - National List of PCB Sys	Clark Development Company/David Terry.....	Murray, UT
San Diego NeXT User's Group BBS.....	(619)456-2522	Support for NeXT Computers	Brian Dear/San Diego NeXT User's Group.....	San Diego, CA
Science Resource Studies BBS.....	(202)634-1764	Federal R&D Budget - Technical Labor Market Statistics	National Science Foundation.....	Washington, D.C.
SDN Project, The 1:141/840.....	(203)634-0370	The Original Software Distribution Network	Ray Kaliss.....	Meriden, CT
SEABOARD.....	(804)442-6047	Support system for ARC, SEADOG, and AXE software.	System Enhancement Associates.....	Nassawadox, VA
Seagate Technical Support BBS.....	(408)438-8771	Installation and Specifications for Hard Drive Models	Seagate/Bill Rudok.....	Scotts Valley, CA
Searchlight BBS.....	(516)689-2566	Support system for Searchlight BBS Software	Searchlight Software.....	Stony Brook, NY
SemWare Support BBS.....	(404)641-8988	Home of QEdit - A Superb Shareware Text Editor	Sammy Mitchell/SemWare Software Products.....	Marietta, GA
SENDIT.....	(701)237-3283	North Dakota K-12 Educational Net-teinet sendit.nodak.edu	Gleason Sackman/NDU.....	Fargo, ND
SIGAT BBS.....	(503)648-4168	CD-ROM/Optical Publishing Info - Lists of Gov. CD Data	SIG on CD-ROM Applications and Technol.....	Gaithersburg, MD
Sistema Profesional Informacion.....	(525)590-5988	Largest BBS in Mexico - Spanish Language TBBS	Tecnologia Uno Cero S.A. de C.V.....	Mexico City
Skeleton Closet, The.....	(804)671-8547	Genealogy Programs File Distribution Net 1:271/23	Debbi McKay.....	Virginia Beach, VA
Society for Technical Comm. BBS.....	(703)522-3299	STC Job Service, Freelance Registry - Technical Writers	Society for Technical Communication.....	Washington, D.C.
Software Creations BBS.....	(508)368-4137	Home of Apogee Software/Commander Keen Series	Dan Linton.....	Clinton, MA
Sonshine Express BBS.....	(510)651-2440	Family Oriented Christian BBS	Anton Johnson.....	Fremont, CA
Sound Advice BBS.....	(816)436-4516	Twenty Line PCBoard with 2 Gigabytes Storage - HST Modems	Roy Timberman.....	Gladstone, MO
Source for Source, The.....	(516)668-7824	Clipper/Xbase/General Programming File Distribution 107/230	Erk VanRiper.....	Bay Shore, NY
Spare Parts 1:130/38.....	(817)540-3527	Windows Distribution Network - Windows utilities/files	Larry Mundy.....	Bedford, TX
Star-Link Network BBS.....	(718)972-6099	9-nodes, 2.1GB, link, 75,000 programs	Michael Keylin.....	Brooklyn, NY
Starlink BBS.....	(915)235-4818	Technical Support for Predictive Maint Customers	John Land.....	Sweetwater, TX
State and Local Emergency Mgmt.....	(202)646-2887	Hazardous Materials/National Dam Watch/Emergency Info	Federal Emergency Management Agency.....	Washington, D.C.
Stillwaters BBS.....	(708)403-2826	Home of Stillwaters Chicagoand BBS List - over 500 systems	Colby Jordan (BBS) Peter Anvin (list).....	Orland Park, IL
Supremacy Foundation BBS.....	(305)370-9376	Online Democracy/Political Culture for the Future	Tim Stryker.....	Davie, FL
TAXACOM.....	(716)896-7581	Botany, Herbaria, FLORA ONLINE Newsletter, Latin Translation	Clinton Herbarium, Buffalo Museum.....	Buffalo, NY
TEAMate Unix Bulletin Board.....	(310)318-5302	Demo/Support for TEAMate BBS Software for Unix	Bob Baskerville/MMB Development Corp.....	Manhattan Beach, CA
Telegodzilla.....	(503)621-3746	Home of Zmodem File Transfer Protocol/YModem/YAM	Chuck Forsberg/Omen Technology Incorp.....	Portland, OR
Telepath.....	(415)358-8641	DBMS/Dr. Dobbs Journal Magazine Online Service	M&T Publishing.....	Redwood City, CA
Telux Support BBS.....	(919)481-9399	Support Service for Telix Communications Software	Jeff Woods/deltaComm Development.....	Gary, NC
The Back Room.....	(718)499-1614	America's Largest Exclusively Gay DB - Home of Gaycomm	Fred Kohn.....	Richmond Hill, NY
The Business BBS.....	(310)477-0408	Utilities/Support for Microsoft Windows	Girard Westerberg/Brian Bartee.....	Los Angeles, CA
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The Well.....	(415)332-7190	Unix Conferencing System - \$10 monthly plus \$2.50 Hourly	Sausalito.....	Sausalito, CA
Titan BBS.....	(904)476-1270	Adult BBS - Online Games - GIF Images	Clayton Manson.....	Pensacola, FL
Tool Shop BBS.....	(818)891-6780	Home of HS-Link and other tools for PCBoard Systems	Sam Smith.....	New York, NY
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US Naval Observatory BBS.....	(202)653-1079	Time - Date - Sunrise - Sunset @ TCO for Commands	US Geological Survey Earthquake Info Cnt.....	Denver, CO
USNS Quick Epicenter Determin.....	(303)273-8672	Earthquake Epicenter Data - Geomagnetsm7E2 800-358-2663	US Naval Observatory.....	Washington, D.C.
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Ventura Professional Forum.....	(408)227-4818	Ventura Publisher User's Group BBS	Steve Root/WeatherBrief Data Services.....	Salt Lake City, UT
WeatherBank.....	(800)827-2727	Online Weather Forecasts for Any City - Download Radar Data	Western Digital Corporation.....	Los Angeles, CA
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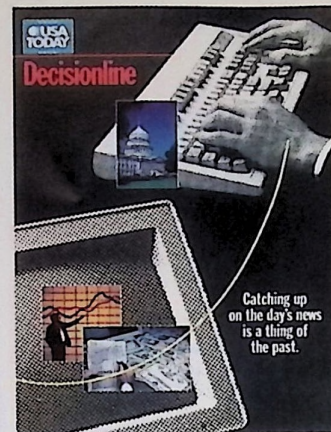
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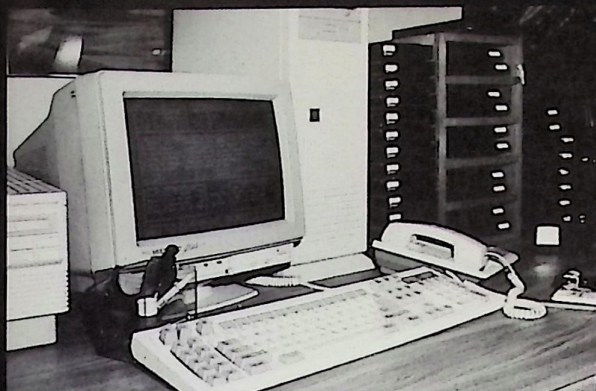


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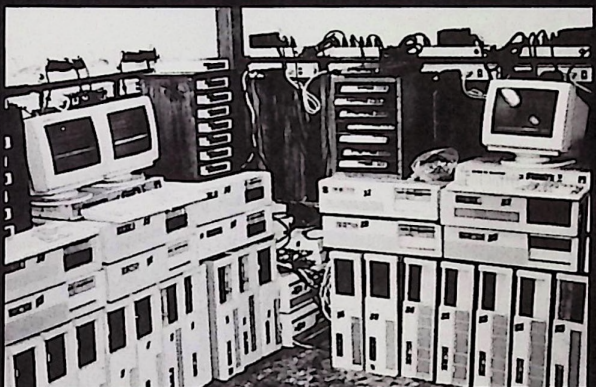
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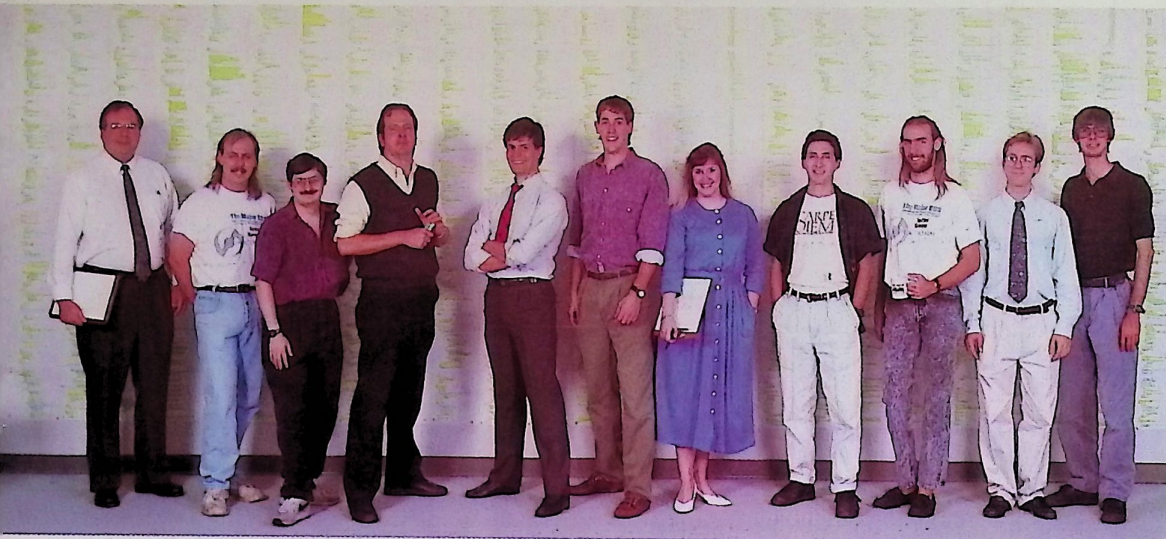
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The Major BBS Development Team with about 5% of the code they wrote and tested, line by line. From left to right: Bert Love, Edward Bush, Richard Skurnick, Tim Stryker, Bob Stein, Brian Stephens, Sheri Robert, Les Bird, Chris Robert, Scott Brinker, Chris Kotacka

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